Document 1

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Friday, 20 June 2025 9:57 AM
To: s 22(1)(a)(ii)@dfat.gov.au
Subject: 20250620 - ARPANSA Radiation Assessment Report - Iran and Israel [SEC=OFFICIAL:Sensitive]
Attachments: 20250620_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi,

Please find attached the updated ARPANSA Radiation Assessment Report for sites in Iran and Israel.

We have added several embassy locations to the Bushehr modelled release map.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii) @arpansa.gov.au

Kind regards,

s 22(1)(a)(ii)
s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

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Document 2

s 22(1)(a)(ii)

From: s 22(1)(a)(ii)
Sent: Friday, 20 June 2025 6:42 PM
To: Rick Tinker
Cc: s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii)
Subject: RE: Executive Update 5 on events in the Middle East [SEC=OFFICIAL:Sensitive]

OFFICIAL: Sensitive

Hi Rick,

We haven't done a quantitative analysis but I have done a rough count of plume directions and estimated dose rates for our simulations over the last two weeks to give an idea. The distances are large enough that for a small release at any facility except perhaps Bushehr the IRMIS network would likely not detect it at all. For significant releases then Bushehr is the main site that could likely be detected by IRMIS. s 33(b) & 45 The primary source of information would likely be USIE updates from Iran or neighbouring countries, Iran was fast with updates following the Natanz and Esfahan strikes. CTBTO stations would get detections at a later date. Kuwait has a nearby particulate station which could be useful, in other directions we may not get a detection for some time with the closest operating stations are in Russia, Mongolia, China, Malaysia, and one in the British Indian Ocean territory below the Maldives.

For the IRMIS detectors over the 6 release times and last 14 days, with significant releases:
Bushehr – ~70-80% hits , this is very weather dependent – If the plume would move towards Iraq, Kuwait, Saudi Arabia, Qatar, UAE, s 33(b) & 45 would likely detect it. For most of the recent simulations it did move along the Persian gulf and towards these countries. If it moves East/North East back over Iran then we may not see anything on IRMIS.

Fordow and Natanz – unlikely to see any detections on IRMIS

Tehran research reactor – unlikely to see any detections on IRMIS – it would have to be a significant release with coincident weather that moves the plume directly towards detectors in Iraq or Turkey.

Negev research reactor in Israel – ~80% hits, this is also weather dependent, the wind was moving towards Jordan and Saudi Arabia most times. Towards Egypt or back up into Israel we would not see.

Soreq research reactor in Israel – if a significant release moved towards Jordan it may be seen, otherwise unlikely.

This is assuming data availability on IRMIS, which has been poor especially over the last two days (unavailable for several hours at a time). The network is still operational so IAEA would be getting this information but our ability to view the data is poor. We could do a more quantitative analysis but it would take some time. Please let me know if you have any questions.

Regards,
s 22(1)(a)(ii)

s 22(1)(a)(ii)
Acting Assistant Director Lead Modeller
Australian Radiation Protection and Nuclear Safety Agency

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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

From: Rick Tinker <Rick.Tinker@arpansa.gov.au>
Sent: Friday, 20 June 2025 4:10 PM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Subject: RE: Executive Update 5 on events in the Middle East [SEC=OFFICIAL:Sensitive]

OFFICIAL: Sensitive

Hi s 22(1)(a)(ii)
Yes, credible worst-case scenarios. For example I expect that for the Fordow site, levels will not be detectable for the closest IRMIS detectors. For other nuclear reactor sites detections are more likely.
Rick

Rick Tinker
Branch Head and Chief Radiation Health Scientist
Australian Radiation Protection and Nuclear Safety Agency

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

From: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Sent: Friday, 20 June 2025 2:12 PM
To: Rick Tinker <Rick.Tinker@arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Subject: Re: Executive Update 5 on events in the Middle East [SEC=OFFICIAL:Sensitive]

Hello Rick,
So detection of a worst case scenario we are working to? Is that what you are asking? As an aside, we lost access yesterday possibly due to Israel announcing targeting of the Arak site and people flooding the IRMIS Website.
s 22(1)(a)(ii)

Get Outlook for iOS

From: Rick Tinker <Rick.Tinker@arpansa.gov.au>
Sent: Friday, June 20, 2025 1:57:20 PM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Subject: RE: Executive Update 5 on events in the Middle East [SEC=OFFICIAL:Sensitive]

OFFICIAL: Sensitive

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Hi s 22(1)(a)(ii)

A technical question regarding the IRMIS network. With the scenarios that we are running for each site, what is the probably of detection at one or more IRMIS detector site. This is not a high priority.

Rick

Rick Tinker
Branch Head and Chief Radiation Health Scientist
Australian Radiation Protection and Nuclear Safety Agency

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

From: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Sent: Friday, 20 June 2025 10:53 AM
To: Gillian Hirth <Gillian.Hirth@arpansa.gov.au>; Rick Tinker <Rick.Tinker@arpansa.gov.au>; Ivan Williams <Ivan.Williams@arpansa.gov.au>; Jim Scott <Jim.Scott@arpansa.gov.au>; Tone Doyle <tone.doyle@arpansa.gov.au>; David Colliver <David.Colliver@arpansa.gov.au>; Martin Reynolds <martin.reynolds@arpansa.gov.au>; Nathan Wahl <nathan.wahl@arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Subject: RE: Executive Update 5 on events in the Middle East [SEC=OFFICIAL:Sensitive]

Hello All,

s 22(1)(a)(ii)

ARPANSA support to the crisis. During the past 24 hours, ARPANSA continues to support the DFAT Crisis Centre by providing the our daily *ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel*. ARPANSA was specifically requested to model spread from a damaged Bushehr Nuclear Power Plant (NPP) over the region – Qatar, UAE etc, where Australians are located. RSB has provided some initial information on the reactor and we are poised to provide detailed assessments should the Bushehr NPP be targeted.

s 22(1)(a)(ii)

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s 22(1)(a)(ii) [redacted]

[redacted]

[redacted]

[redacted]

s 22(1)(a)(ii) [redacted]
Emergency Management Project Leader
Australian Radiation Protection and Nuclear Safety Agency

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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Document 3

s 22(1)(a)(ii)

From: Rick Tinker
Sent: Friday, 20 June 2025 8:43 PM
To: s 22(1)(a)(ii)
Cc: s 22(1)(a)(ii)
Subject: RE: Executive Update 5 on events in the Middle East [SEC=OFFICIAL:Sensitive]

OFFICIAL: Sensitive

Hi All,

Thank you s 22(1)(a)(ii) for this assessment. Terrific - it answers all my questions. It makes me want to deeper dive into the data, but I know s 22(1)(a)(ii) will tell me off!

Choosing my words carefully given the classification, I raise this question because of the reliance on IAEA reports, including social media, about radiation levels and detections in the Middle East. The issue is when we know we cannot detect something on the network, even under worse case, then the answer will always be no. This is fine when for certain facilities, but it must be evidence based. I should also note that IAEA relies on more that IRMES. s 22(1)(a)(ii)

s 22(1)(a)(ii)

Rick

Rick Tinker
Acting CEO
Australian Radiation Protection and Nuclear Safety Agency

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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Document 4

[redacted]

From: s 22(1)(a)(ii)
Sent: Saturday, 21 June 2025 11:05 AM
To: Gillian Hirth; Rick Tinker; Ivan Williams; Jim Scott; Tone Doyle; David Colliver; Martin Reynolds; Nathan Wahl; s 22(1)(a)(ii)
Cc: s 22(1)(a)(ii)
Subject: Executive Update 6 on events in the Middle East [SEC=OFFICIAL:Sensitive]
Attachments: s 22(1)(a)(ii) [SEC=OFFICIAL:Sensitive]; 20250621 _ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Hello All,

s 22(1)(a)(ii)

[redacted]

ARPANSA support to DFAT

- After this discussion at the IDETF yesterday, ARPANSA will advise the IDETF that ARPANSA will provide the following support:
  - Provide a detailed explanation of Grossi's comments in the daily *ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel*. This is attached.
  - s 22(1)(a)(ii) [redacted]
  - s 22(1)(a)(ii) [redacted]

RSB should be on standby to support detailed assessments should the Bushehr NPP be targeted.

s 22(1)(a)(ii) [redacted]

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s 22(1)(a)(ii) [redacted]

[redacted]

Please let me know if you have any questions.

s 22(1)(a)(ii) [redacted]
Emergency Management Project Leader
Australian Radiation Protection and Nuclear Safety Agency

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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Document 5

s 22(1)(a)(ii)

From: s 22(1)(a)(ii)
Sent: Saturday, 21 June 2025 8:22 AM
To: s 22(1)(a)(ii)
Subject: FW: For information | ARPANSA advice on radiation exposure [SEC=OFFICIAL:Sensitive]

OFFICIAL: Sensitive

Hey s 22(1)(a)(ii)

Are we getting this wrong?

s 22(1)(a)(ii)
Emergency Management Project Leader
Australian Radiation Protection and Nuclear Safety Agency

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

From: s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>
Sent: Saturday, 21 June 2025 8:16 AM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; Belinda Casson <Belinda.Casson@dfat.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>; Natalie Roche <Natalie.Roche@dfat.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>; Nathan Wahl <nathan.wahl@arpansa.gov.au>
Subject: FW: For information | ARPANSA advice on radiation exposure [SEC=OFFICIAL:Sensitive]

OFFICIAL: Sensitive

Good morning s 22(1)(a)(ii) and s 22(1)(a)(ii),

One of our post's has provided the below IAEA comments which differs to previous ARPANSA assessments. It would be greatly appreciated if this could be considered in today's report and mentioned at today's IDETF.

> I note the comments made by the Director General of the IAEA to the UNSC today - repeated below:
>
> https://www.iaea.org/newscenter/statements/iaea-director-general-grossis-statement-to-unsc-on-situation-in-iran-20-june-2025
>
> DG Grossi remarks
>
> ++++++++++++++++++++++++

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Let me now refer to the Bushehr Nuclear Power Plant. This is the nuclear site in Iran where the consequences of an attack could be most serious. It is an operating nuclear power plant and as such it hosts thousands of kilograms of nuclear material. Countries of the region have reached out directly to me over the past few hours to express their concerns, and I want to make it absolutely and completely clear: In case of an attack on the Bushehr Nuclear Power Plant a direct hit could result in a very high release of radioactivity to the environment.

Similarly, a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt, which could result in a high release of radioactivity to the environment. In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres. Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented.

++++++++++++++++++++

This is quite different to ARPANSA's assessment. It feels to me like there is still work to do to adequately mitigate the risk and communicate steps to be taken in the worst-case scenario.

There was media reporting that Iranian air defence was engaged in the city of Bushehr today highlighting the potential for error.

https://www.aljazeera.com/amp/news/2025/6/20/iaeas-grossi-warns-of-nuclear-disaster-if-israel-hits-irans-bushehr-plant

Kind regards,

_____
s 22(1)(a)(ii) [redacted]
Director, Employee Health and Safety Section
People Culture Branch | People Division
Department of Foreign Affairs and Trade
Tel: s 22(1)(a)(ii) | Mob: s 22(1)(a)(ii) | **E:** s 22(1)(a)(ii) @dfat.gov.au | s 22(1)(a)(ii) @dfat.gov.au | s 22(1)(a)(ii) @dfat.gov.au | www.dfat.gov.au
Web | Twitter | YouTube | Flickr

Please note I work virtually on Tuesdays and Thursdays.

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Document 6

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Saturday, 21 June 2025 10:44 AM
To: s 22(1)(a)(ii) @dfat.gov.au
Cc: s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) @dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; s 22(1)(a)(ii) @health.gov.au; s 22(1)(a)(ii) @dfat.gov.au; Simon.Johnstone@dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; Mathew.Fox@dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au
Subject: 20250621 - ARPANSA Radiation Assessment Report - Iran and Israel ~~[SEC=OFFICIAL:Sensitive]~~
Attachments: 20250621_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi,

Please find attached the updated ARPANSA Radiation Assessment Report for sites in Iran and Israel.

We have added a statement regarding IAEA Director General Grossi's statement on the consequences of potential incident at the Bushehr nuclear power plant on page 2 of the report.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff in the region.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii) @arpansa.gov.au

Kind regards,

s 22(1)(a)(ii)

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii) @arpansa.gov.au || s 22(1)(a)(ii)

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Australian Radiation Protection and Nuclear Safety Agency

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Document 7

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Sunday, 22 June 2025 10:02 AM
To: s 22(1)(a)(ii)@dfat.gov.au
Cc: s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii)@dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au; s 22(1)(a)(ii)@health.gov.au; s 22(1)(a)(ii) dfat.gov.au; Simon.Johnstone@dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au; Mathew.Fox@dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; Belinda.Casson@dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au; Natalie.Roche@dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; Leonard.BRENNAN@dfat.gov.au; s 22(1)(a)(ii) dfat.gov.au
Subject: 20250622 - ARPANSA Radiation Assessment Report - Iran and Israel [SEC=OFFICIAL:Sensitive]
Attachments: 20250622_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi,

Please find attached the updated ARPANSA Radiation Assessment Report for sites in Iran and Israel.

We have added a page on potential protective actions that may be required in the case of an incident, including the potential for food and drinking water monitoring, on page 3 of the report.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff in the region.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii)@arpansa.gov.au

Kind regards,

s 22(1)(a)(ii)

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii)@arpansa.gov.au || s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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Document 8

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Sunday, 22 June 2025 11:15 AM
To: s 22(1)(a)(ii)@dfat.gov.au
Cc: s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) @dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au; s 22(1)(a)(ii) health.gov.au; s 22(1)(a)(ii) dfat.gov.au; Simon.Johnstone@dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au; Mathew.Fox@dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; Belinda.Casson@dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au; Natalie.Roche@dfat.gov.au; s 22(1)(a)(ii) @dfat.gov.au; Leonard.BRENNAN@dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au
Subject: 20250622 - UPDATED - ARPANSA Radiation Assessment Report - Iran and Israel [SEC=OFFICIAL:Sensitive]
Attachments: 20250622_Updated_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi,

Please find attached an updated ARPANSA Radiation Assessment Report for sites in Iran and Israel. This is an updated version following reports of US military strikes on the Fordow, Natanz, and Isfahan nuclear sites. Modelling for the Natanz site has been added on page 9 of the report.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff in the region.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii) @arpansa.gov.au

Kind regards,

s 22(1)(a)(ii)

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii) @arpansa.gov.au || s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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Document 9

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Sunday, 22 June 2025 6:26 PM
To: s 22(1)(a)(ii)
Subject: RE: For information | ARPANSA advice on radiation exposure ~~[SEC=OFFICIAL:Sensitive]~~

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi s 22(1)(a)(ii)

Yes we can add Isfahan in. We will look to include it as a separate slide in future products.

Kind regards,

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii) @arpansa.gov.au || s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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From: s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>
Sent: Sunday, 22 June 2025 4:41 PM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>; Belinda Casson <Belinda.Casson@dfat.gov.au>
Subject: Fwd: For information | ARPANSA advice on radiation exposure ~~[SEC=OFFICIAL:Sensitive]~~

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi s 22(1)(a)(ii)
If possible, could future reports please include Isfahan (INTC).
Cheers
s 22(1)(a)(ii)

Released by ARPANSA under FOI

Document 10

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Monday, 23 June 2025 10:45 AM
To: s 22(1)(a)(ii)@dfat.gov.au
Subject: 20250623 ARPANSA Radiation Assessment Report - Iran and Israel [SEC=OFFICIAL:Sensitive]
Attachments: 20250623_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi,

Please find attached an updated ARPANSA Radiation Assessment Report for sites in Iran and Israel.

Modelling has been included for the Esfahan Nuclear Technology Centre.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff in the region.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii)@arpansa.gov.au

Kind regards,

s 22(1)(a)(ii)

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii)@arpansa.gov.au || s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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Document 11

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Tuesday, 24 June 2025 10:00 AM
To: s 22(1)(a)(ii)@dfat.gov.au
Subject: 20250624 ARPANSA Radiation Assessment Report - Iran and Israel ~~[SEC=OFFICIAL:Sensitive]~~
Attachments: 20250624_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi,

Please find attached an updated ARPANSA Radiation Assessment Report for sites in Iran and Israel.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff in the region.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii)@arpansa.gov.au

Kind regards,

s 22(1)(a)(ii)

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii)@arpansa.gov.au || s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

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Document 12

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Wednesday, 25 June 2025 10:01 AM
To: s 22(1)(a)(ii)@dfat.gov.au
Subject: 20250625 ARPANSA Radiation Assessment Report - Iran and Israel ~~[SEC=OFFICIAL:Sensitive]~~
Attachments: 20250625_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~
OFFICIAL

Hi,

Please find attached an updated ARPANSA Radiation Assessment Report for sites in Iran and Israel.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff in the region.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii)@arpansa.gov.au

Kind regards,

s 22(1)(a)(ii)

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii)@arpansa.gov.au | s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

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Document 13

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Thursday, 26 June 2025 10:01 AM
To: [redacted]@dfat.gov.au
Subject: 20250626 ARPANSA Radiation Assessment Report - Iran and Israel [redacted]
Attachments: 20250626_ARPANSA Radiation Assessment Report.pdf

[redacted]

OFFICIAL

Hi,

Please find attached an updated ARPANSA Radiation Assessment Report for sites in Iran and Israel.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff in the region.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii)@arpansa.gov.au.

Kind regards,

[redacted]

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii)@arpansa.gov.au | s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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Document 14

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Friday, 27 June 2025 10:03 AM
To: [redacted]@dfat.gov.au
Subject: 20250627 ARPANSA Radiation Assessment Report - Iran and Israel [redacted]
Attachments: 20250627_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi,

Please find attached an updated ARPANSA Radiation Assessment Report for sites in Iran and Israel.

Note that there will be no Radiation Assessment Report produced for 28 June 2025. The next planned Report will be for 29 June 2025.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff in the region.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii) @arpansa.gov.au

Kind regards,

s 22(1)(a)(ii)

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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Document 15

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Sunday, 29 June 2025 9:57 AM
To: s 22(1)(a)(ii) @dfat.gov.au; [redacted] @dfat.gov.au
Subject: 20250629 ARPANSA Radiation Assessment Report - Iran and Israel
[redacted]
Attachments: 20250629_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Hi,

Please find attached an updated ARPANSA Radiation Assessment Report for sites in Iran and Israel.

There is no change to ARPANSA's advice regarding radiological risk to embassy staff in the region.

For any questions or clarifications you can contact ARPANSA at s 22(1)(a)(ii)@arpansa.gov.au.

Kind regards,

[redacted]

s 22(1)(a)(ii)
ARPANSA Duty Officer
s 22(1)(a)(ii) @arpansa.gov.au || s 22(1)(a)(ii)

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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Document 16

s 22(1)(a)(ii)

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From: s 22(1)(a)(ii) <s 22(1)(a)(ii)@arpansa.gov.au> on behalf of s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Sent: Saturday, February 28, 2026 8:12 pm
To: Gillian Hirth <Gillian.Hirth@arpansa.gov.au>; Rick Tinker <Rick.Tinker@arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii)@arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Subject: Israel/U.S.A. - Iran Conflict Feb 2026 [SEC=OFFICIAL]

Dear Gillian,

I am emailing to inform you that the initial strikes carried out in Tehran have become more widespread, and retaliatory strikes have been launched according to media outlets. This includes strikes in Ishfahan (location of an Iranian nuclear facility often cited in safeguards news) among other regional Iranian cities. There is no confirmation that the nuclear facility there was the target however.

Of note, a DFAT RED ALERT was issued at the start of the event, which I have attached.

I am emailing to request that the AUSRNEPLAN be activated to ALERT to support anticipated DFAT requests for information with a virtual RECC of modellers. Those modellers are working towards having a product for 10.00 Melbourne time tomorrow and s 22(1)(a)(ii) is ready/available for an IDETF if one is called. I propose the EPR Duty Officer position (myself currently) work as Crisis Coordinator until there is clarity on the events, after which the role can be transferred (most likely after the weekend).

Regards,

s 22(1)(a)(ii)
Senior Regulatory Officer
Defence Engagement Project Team
Radiation Health Services
Australian Radiation Protection and Nuclear Safety Agency

t: s 22(1)(a)(ii)

m: s 22(1)(a)(ii)
w: arpansa.gov.au

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Australian Radiation Protection and Nuclear Safety Agency

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Document 17

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Sunday, 1 March 2026 10:06 AM
To: s 22(1)(a)(ii)
Cc: s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii)
Subject: INFORMATION ONLY - ARPANSA predictive modelling for nuclear installations in the Middle East ~~[SEC=OFFICIAL:Sensitive]~~
Attachments: 20260301_ARPANSA Radiation Assessment Report.pptx

~~OFFICIAL: Sensitive~~
OFFICIAL

Dear s 22(1)(a)(ii)

ARPANSA began promptly conducting predictive modelling of the consequences of a strike on a nuclear installation in Iran or Israel when media began covering strikes in Iran and Israel last night as a function of the failed nuclear deal negotiations between the United States and Iran.

From our media scanning, we have seen that strikes have been reported in cities containing nuclear installations such as Esfahan and Tehran, but **we have not seen reports confirming nuclear installations themselves have been targeted**.

We have attached a pre-emptive modelling product we produced should the news today uncover that nuclear sites were in fact struck and will continue to scan media reports periodically. In the event that there is no indication that a nuclear installation was struck, we will not update the product with new modelling until there is a rationale to do so.

Regards,

s 22(1)(a)(ii)
Senior Regulatory Officer
Defence Engagement Project Team
Radiation Health Services
Australian Radiation Protection and Nuclear Safety Agency

t: s 22(1)(a)(ii)
m: s 22(1)(a)(ii)
w: arpansa.gov.au

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Document 18

s 22(1)(a)(ii)

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From: s 22(1)(a)(ii) s 22(1)(a)(ii) @arpansa.gov.au>
Sent: Monday, 2 March 2026 11:12 AM
To: Nathan Wahl <nathan.wahl@arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii)
<s 22(1)(a)(ii) @arpansa.gov.au>
Subject: RE: Radiological Emergency Coordination Centre [SEC=OFFICIAL]

Hello Nathan,

Thanks for sharing your thoughts.

s 22(1)(a)(ii)

I'm completely aligned with your perspective on not providing any product to DFAT until there's confirmation that nuclear targets have actually been hit. Over the weekend, the Crisis Coordinator, s 22(1)(a)(ii) and I discussed this at length and, while there was some reporting around Isfahan, we didn't consider it to be concrete enough to act on. Despite this, we felt it was important to remind DFAT IDETF that we're prepared and ready to respond if needed. For now, the Crisis Coordinator won't be generating further products unless we have solid confirmation that nuclear facilities have been impacted. We're relying on intelligence from the appropriate agencies within the IDETF, which s 22(1)(a)(ii) will be attending today. There's a chance we'll hear something from the IAEA by 4pm, but our approach will remain DFAT-driven in terms of any product we deliver. I'd also discourage seeking targeting information from outside the IDETF.

s 22(1)(a)(ii)

Regards,

s 22(1)(a)(ii)

Emergency Management Project Leader

Australian Radiation Protection and Nuclear Safety Agency

Australian Government

Australian Radiation Protection and Nuclear Safety Agency

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Document 19

s 22(1)(a)(ii)

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From: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Sent: Wednesday, 4 March 2026 8:50 AM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Subject: Re: Natanz Nuclear Facility Struck [SEC=OFFICIAL]

Good morning,

This appears to be the strikes I mentioned yesterday getting more media coverage. The surface strikes on the entrances to the deeper facility. I'm happy to start sending DFAT products, but the message would be similar to the last product we sent.

s 22(1)(a)(ii)

s 22(1)(a)(ii)

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From: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Sent: Wednesday, March 4, 2026 8:07:40 AM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>
Subject: Natanz Nuclear Facility Struck [SEC=OFFICIAL]

Hello s 22(1)(a)(ii)

I see that the media is reporting, and the IAEA has confirmed, that the Natanz Nuclear Facility has been targeted and struck by the US/Israeli military. I think this is enough to now 'push' product to DFAT Crisis Centre advising them why we are doing so. We could also mention why we are doing this at the IDETF and ensure we pass the message of our assessment.

Let's chat if we need to.

Regards,

s 22(1)(a)(ii)
Emergency Management Project Leader
Emergency Management
Radiation Health Services
Australian Radiation Protection and Nuclear Safety Agency

t: s 22(1)(a)(ii)
m: s 22(1)(a)(ii)
w: arpansa.gov.au

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Document 20

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Tuesday, 10 March 2026 3:30 PM
To: s 22(1)(a)(ii) dfat.gov.au; s 22(1)(a)(ii) dfat.gov.au
Cc: s 22(1)(a)(ii)
Subject: RE: 20260306 ARPANSA Radiation Assessment Report ~~[SEC=OFFICIAL:Sensitive]~~
Attachments: 20260310_ARPANSA Radiation Assessment Report.pdf

~~OFFICIAL: Sensitive~~

OFFICIAL

Dear DFAT Colleagues,

Please find attached the latest ARPANSA Radiation Assessment Report regarding the situation in the Middle East.

At this stage, additional reports will be provided on request or in the event of a radiological release.

Kind regards,

s 22(1)(a)(ii)
EPR Duty Officer
Australian Radiation Protection and Nuclear Safety Agency

t: s 22(1)(a)(ii)
e: s 22(1)(a)(ii)@arpansa.gov.au | s 22(1)(a)(ii)@arpansa.gov.au | s 22(1)(a)(ii)@arpansa.gov.au
w: arpansa.gov.au

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Australian Radiation Protection and Nuclear Safety Agency

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---

From s 22(1)(a)(ii) <s 22(1)(a)(ii)@arpansa.gov.au> **On Behalf Of** s 22(1)(a)(ii)
Sent: Friday, 6 March 2026 4:08 PM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii)@dfat.gov.au>; s 22(1)(a)(ii)@dfat.gov.au; s 22(1)(a)(ii)@dfat.gov.au
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au>
Subject: 20260306 ARPANSA Radiation Assessment Report ~~[SEC=OFFICIAL:Sensitive]~~

~~OFFICIAL: Sensitive~~

OFFICIAL

Dear DFAT Colleagues,

Please find attached the latest ARPANSA Radiation Assessment Report regarding the situation in the Middle East.

Released by ARPANSA under FOI

At this stage, the next updated version of the report is expected to be provided on Tuesday, 10 March, unless there is a significant change in the situation.

Kind regards,

s 22(1)(a)(ii)
EPR Duty Officer
Australian Radiation Protection and Nuclear Safety Agency

t: s 22(1)(a)(ii)
e: s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a) @arpansa.gov.au
w: arpansa.gov.au

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Document 21

s 22(1)(a)(ii)

From: s 22(1)(a)(ii)
Sent: Monday, 9 March 2026 11:33 AM
To: s 22(1)(a)(ii); Nathan Wahl; s 22(1)(a)(ii) s 22(1)(a)(ii)
Cc: s 22(1)(a)(ii)
Subject: RECC Activities in support of DFAT [SEC=OFFICIAL]
Attachments: s 22(1)(a)(ii)
~~[SEC=OFFICIAL:Sensitive]~~

Hello EPR Duty Officer – s 22(1)(a)(ii), Crisis Coordinator – s 22(1)(a)(ii) Modellers – s 22(1)(a)(ii), and ARPANSA LO to DFAT - s 22(1)(a)(ii),

s 22(1)(a)(ii)

The SITREP should summarise global events (from the DFAT Daily SITREP), DFAT developments, and ARPANSA updates from the past 24 hours, along with upcoming activities for the next 24 hours. Include other relevant issues such as staffing, safety, or security as needed. Refer to the ARPANSA Executive Update for a NPW visit as an example. The CC is responsible for distributing the SITREP. This has worked well to keep the Executive updated.

When do we push product to DFAT?

DFAT is facing a major consular crisis, with many Australians unable to return home. It's important to be supportive and respectful of their situation. We should anticipate potential requests, such as information on nuclear facility strikes in the Middle East. We should also not overwhelm DFAT or crowd their decision space unnecessarily. Currently, there is no need for nuclear or radiological products to be sent as we DFAT are comfortable that we will tell them when there is a significant release of radiological material from a site. However, in this uncertain environment, we should still have the product ready to go so our 'readiness' should be high.

s 22(1)(a)(ii)

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s 22(1)(a)(ii)

[redacted]

s 22(1)(a)(ii)

[redacted]

s 22(1)(a)(ii)

Emergency Management Project Leader
Emergency Management
Radiation Health Services
Australian Radiation Protection and Nuclear Safety Agency

t: s 22(1)(a)(ii)
m: s 22(1)(a)(ii)
w: arpansa.gov.au

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Document 22

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) on behalf of s 22(1)(a)(ii)
Sent: Wednesday, 18 March 2026 1:14 PM
To: s 22(1)(a)(ii) s 22(1)(a)(ii) Vanessa Wood; s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii)
Cc: s 22(1)(a)(ii)
Subject: RE: Iran Nuclear - IAEA Media [SEC=OFFICIAL]
Attachments: 20260317_ARPANSA Radiation Assessment Report.pptx

Hi s 22(1)(a)(ii)
We are aware of the incident and are monitoring through USIE.
As stated by the IAEA we don't expect any offsite impacts from this strike and aren't aware of the plant or individuals onsite being harmed.
I've attached our most recent radiation assessment report which was prepared on the 17th March and doesn't include in its modelling the strike on Beshehr Nuclear Power Plant.
The current situation doesn't change the advice in the report and is still in line with previous advice given by ARPANSA.

Regards,

s 22(1)(a)(ii)
Science Officer Health Physics Measurements
Australian Radiation Protection and Nuclear Safety Agency

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

From: s 22(1)(a)(ii) s 22(1)(a)(ii)@dfat.gov.au>
Sent: Wednesday, 18 March 2026 12:13 PM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>; Vanessa Wood <Vanessa.Wood@dfat.gov.au>; s 22(1)(a)(ii) s 22(1)(a)(ii) @dfat.gov.au>; [redacted] <[redacted]@dfat.gov.au>; [redacted] <[redacted]@dfat.gov.au>; [redacted] <[redacted]@dfat.gov.au>; [redacted] <[redacted]@dfat.gov.au>; s 22(1)(a)(ii) [redacted] < s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) s 22(1)(a)(ii) s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) @protected.arpansa.gov.au
Subject: Iran Nuclear - IAEA Media [SEC=OFFICIAL]

OFFICIAL

Good afternoon all,

For awareness, please see below a recent tweet from the IAEA regarding a strike to the Bushehr Nuclear Power Plan yesterday evening.

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IAEA - International Atomic Energy Agency on X: "The IAEA has been informed by Iran that a projectile hit the premises of the Bushehr NPP on Tuesday evening. No damage to the plant or injuries to staff reported. Director General @RafaelMGrossi reiterates call for maximum restraint during the conflict to prevent risk of a https://t.co/fhze0vOqrQ" / X

s 22(1)(a)(ii) – I believe the existing TP on strikes to nuclear facilities remains valid, but happy to review for updates if needed. We will continue to monitor.

Cheers,
s 22(1)(a)(ii)

_____
Assistant Director | Nuclear Policy Section (NPS)
Nuclear Non-Proliferation and Disarmament Branch (NPB) | International Security Division (ISD)
T s 22(1)(a)(ii) | **M** s 22(1)(a)(ii)

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Document 23

s 22(1)(a)(ii)

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) <s 22(1)(a)(ii)@arpansa.gov.au>
Sent: Sunday, 22 March 2026 10:12 AM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii)@dfat.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au>
Subject: [EXTERNAL] IAEA statement on strikes on Natanz Nuclear Facility [SEC=OFFICIAL]

CAUTION: This email originated from outside the organisation. Do not click links or open attachments unless you recognise the sender.

Hi s 22(1)(a)(ii)
To add context to the IAEA statements that appeared in the most recent SITREP, we have reviewed the incident reports and media surrounding the strikes on Natanz and there's no damage that would result in a release or a change in offsite radiation levels.
ARPANSA is currently at "Watching" status, we can address any monitoring or assessments you require on Monday, unless you're aware of a change in the situation that you would like insight on immediately.
As always the Duty Officer is available, and s 22(1)(a)(ii) inbox are monitored 24/7 if there is any urgent advice or information needed.

Regards,

s 22(1)(a)(ii)
Science Officer Health Physics Measurements, EPR Duty Officer (16/03-26/03)
Monitoring & Emergency Response
Radiation Health Services
Australian Radiation Protection and Nuclear Safety Agency

t: s 22(1)(a)(ii)
m: s 22(1)(a)(ii)
w: arpansa.gov.au

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s 22(1)(a)(ii)

s 22(1)(a)(ii)

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From: s 22(1)(a)(ii) s 22(1)(a)(ii) @arpansa.gov.au> on behalf of s 22(1)(a)(ii)
<s 22(1)(a)(ii) @arpansa.gov.au>
Sent: Sunday, March 22, 2026 9:54:49 AM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au> s 22(1)(a)(ii)
<s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au>; s 22(1)(a)(ii)
<s 22(1)(a)(ii) arpansa.gov.au>
Subject: RE: Middle East Regional Conflict 2026 SitRep v44 - 0530 22 March [SEC=OFFICIAL]

Hi s 22(1)(a)(ii)
I read the INES form last night and was checking the media this morning. There's no reports from either side of damage to a facility that would result in a release.
The IAEA has been calling for restraint and both Iran and IAEA have been highlighting how strikes on nuclear facilities are prohibited. I don't think there's any change from the situation as it was on the 17th and as we have no modelling officer currently on restriction there's not any modelling that can be done until Monday.
I'll email the crisis centre with the above advice and ask if there's anything they would like us to look at on Monday.

s 22(1)(a)(ii)

Regards,

s 22(1)(a)(ii)

Science Officer Health Physics Measurements
Australian Radiation Protection and Nuclear Safety Agency

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

From: s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au>
Sent: Sunday, 22 March 2026 9:40 AM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) @arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au>;
s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au>
Subject: Fw: Middle East Regional Conflict 2026 SitRep v44 - 0530 22 March [SEC=OFFICIAL]

Hello s 22(1)(a)(ii),

Can I ask you to reach out to the DFAT Crisis Centre and ask if they have any concerns or would like modelling for the most recent strikes on nuclear facilities. You might also advise the executive group of these strikes. Give me a call if you need to discuss.

The sitrep reads - The International Atomic Energy Agency called for ‘restraint’ after Israel and the US targeted a nuclear facility in central Iran. Iranian media said no radiation leakage
was detected.

s 22(1)(a)(ii)

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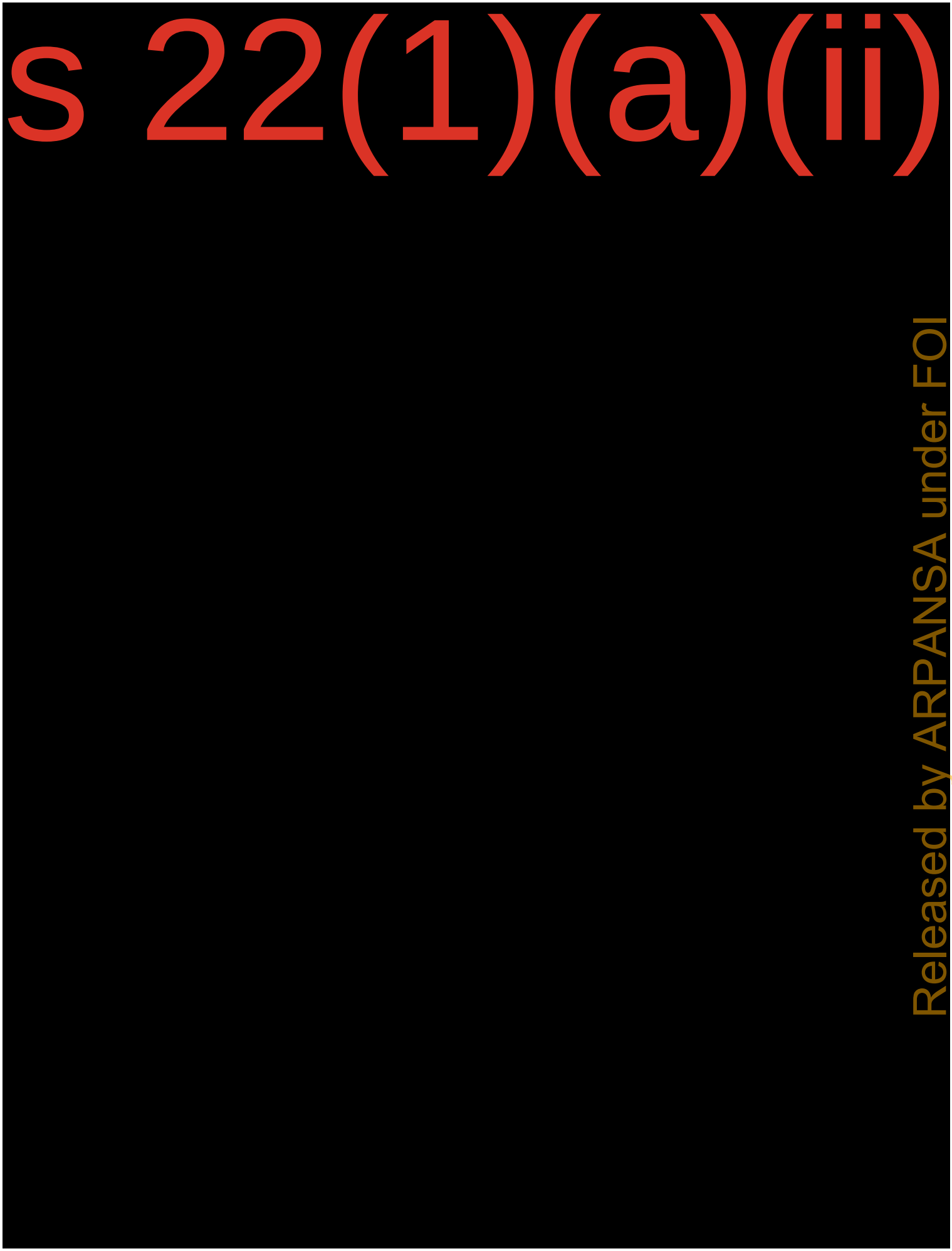
From: s 22(1)(a)(ii) <s 22(1)(a)(ii)@dfat.gov.au>
Sent: Sunday, March 22, 2026 5:42:45 AM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii) arpansa.gov.au>
Subject: Middle East Regional Conflict 2026 SitRep v44 - 0530 22 March [SEC=OFFICIAL]

Click here to subscribe/unsubscribe to updates on the 2026 Middle East Regional Conflict.

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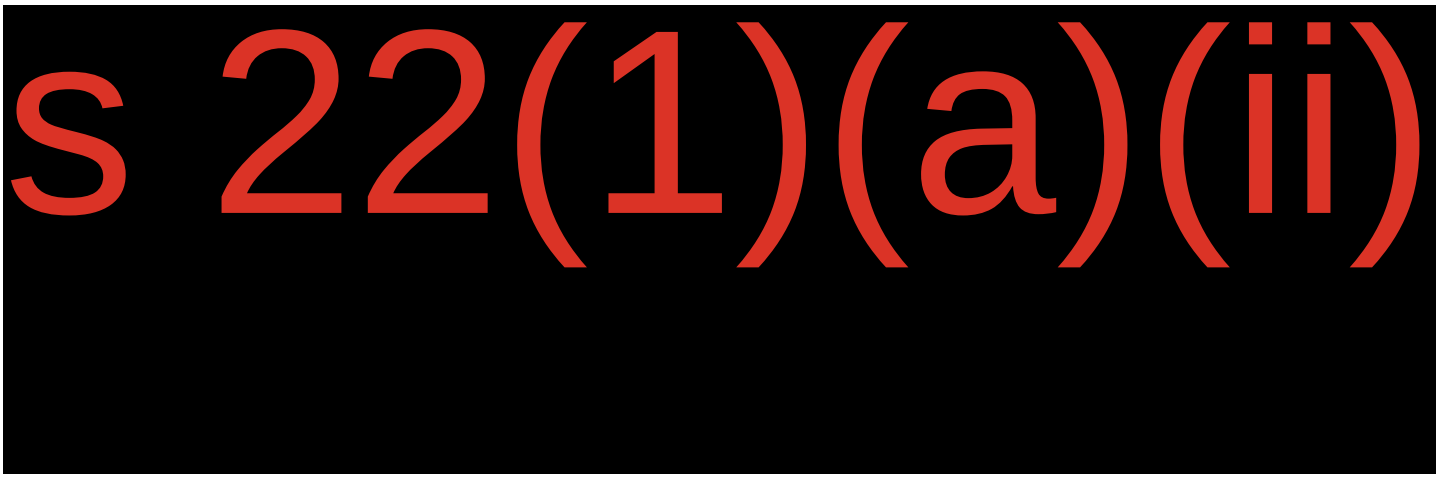
s 22(1)(a)(ii)

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s 22(1)(a)(ii)
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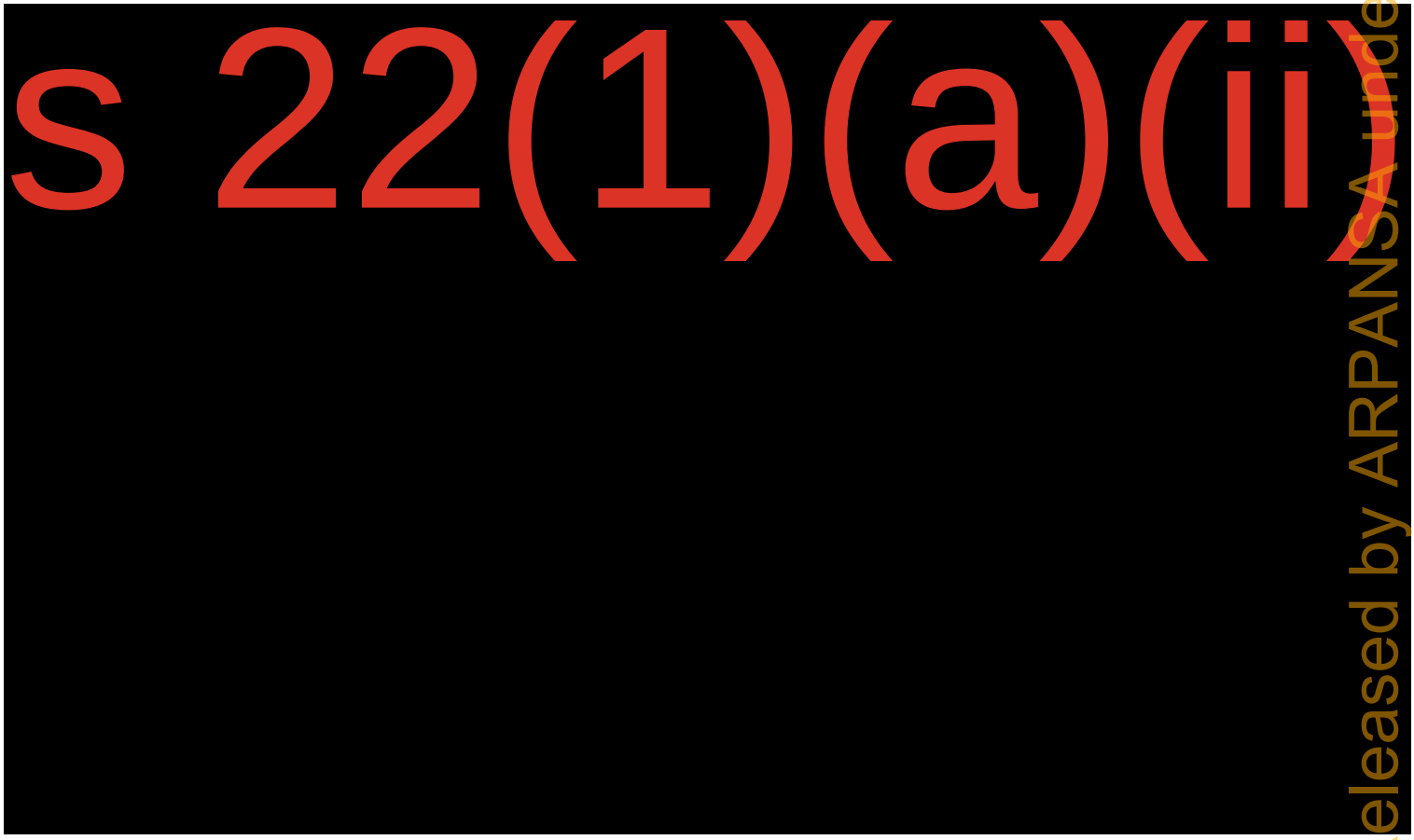
s 22(1)(a)(ii)

Released by ARPANSA under FOI

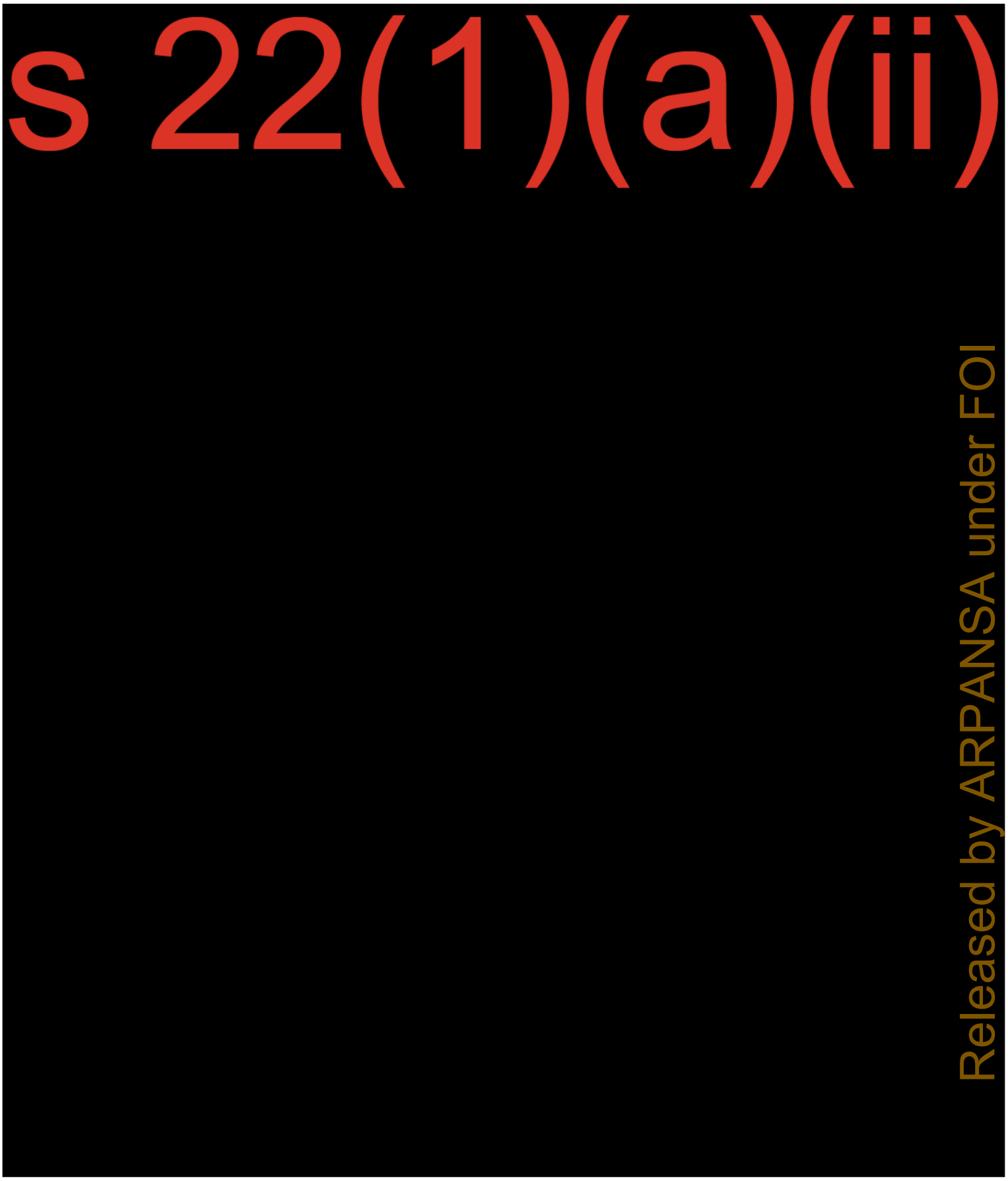


INTERNATIONAL REACTIONS

- The International Atomic Energy Agency called for 'restraint' after Israel and the US targeted a nuclear facility in central Iran. Iranian media said no radiation leakage was detected.

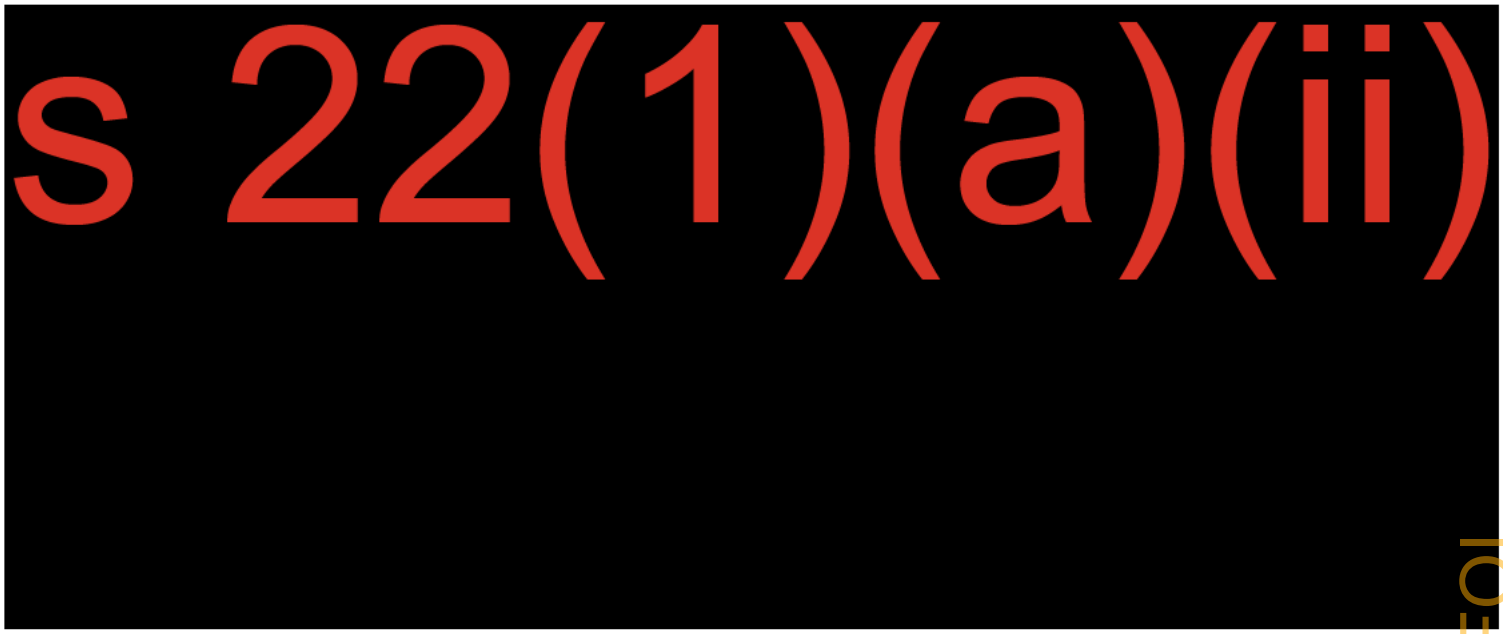


Released by ARPANSA under FOI

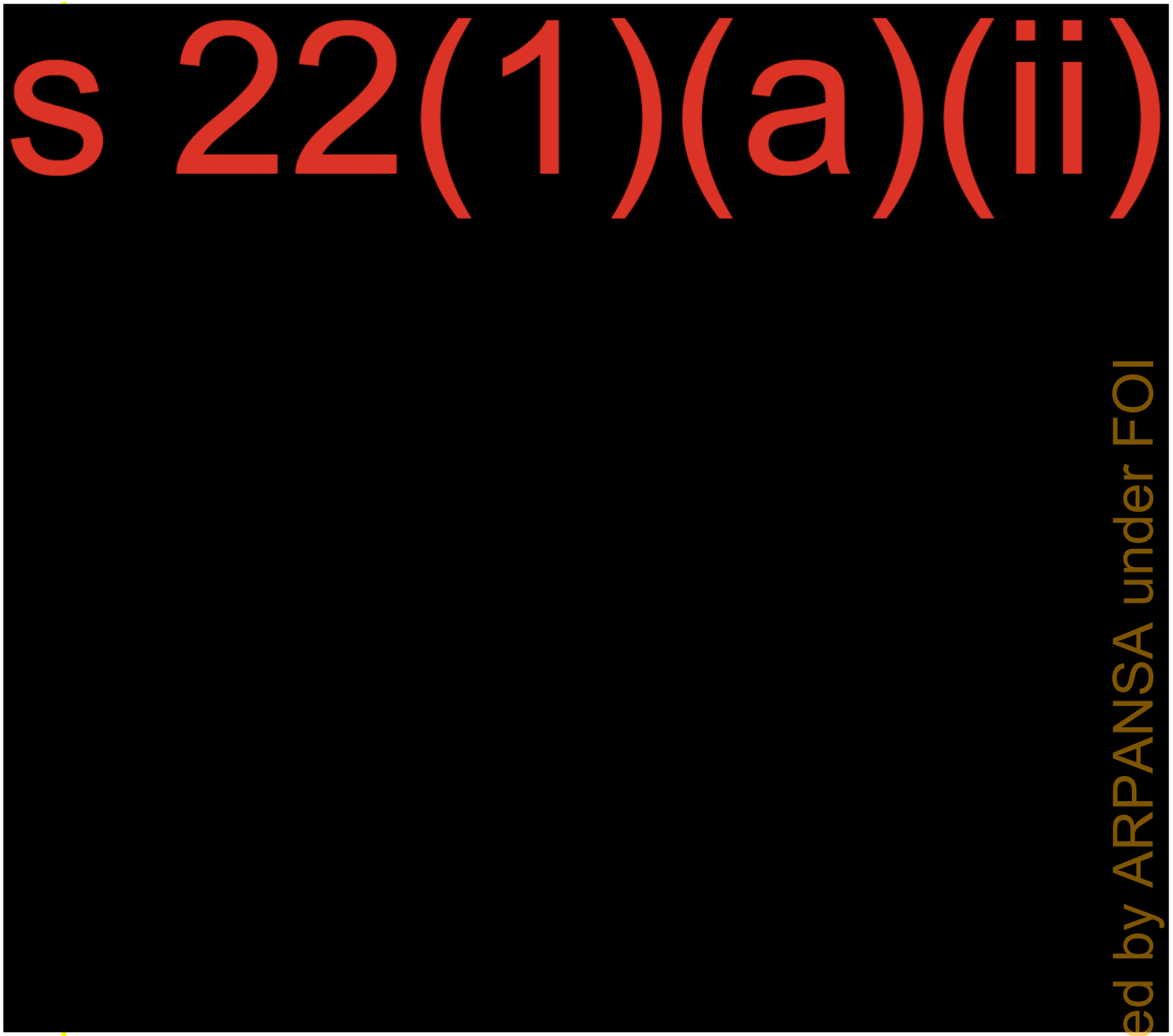

s 22(1)(a)(ii)
Released by ARPANSA under FOI

s 22(1)(a)(ii)

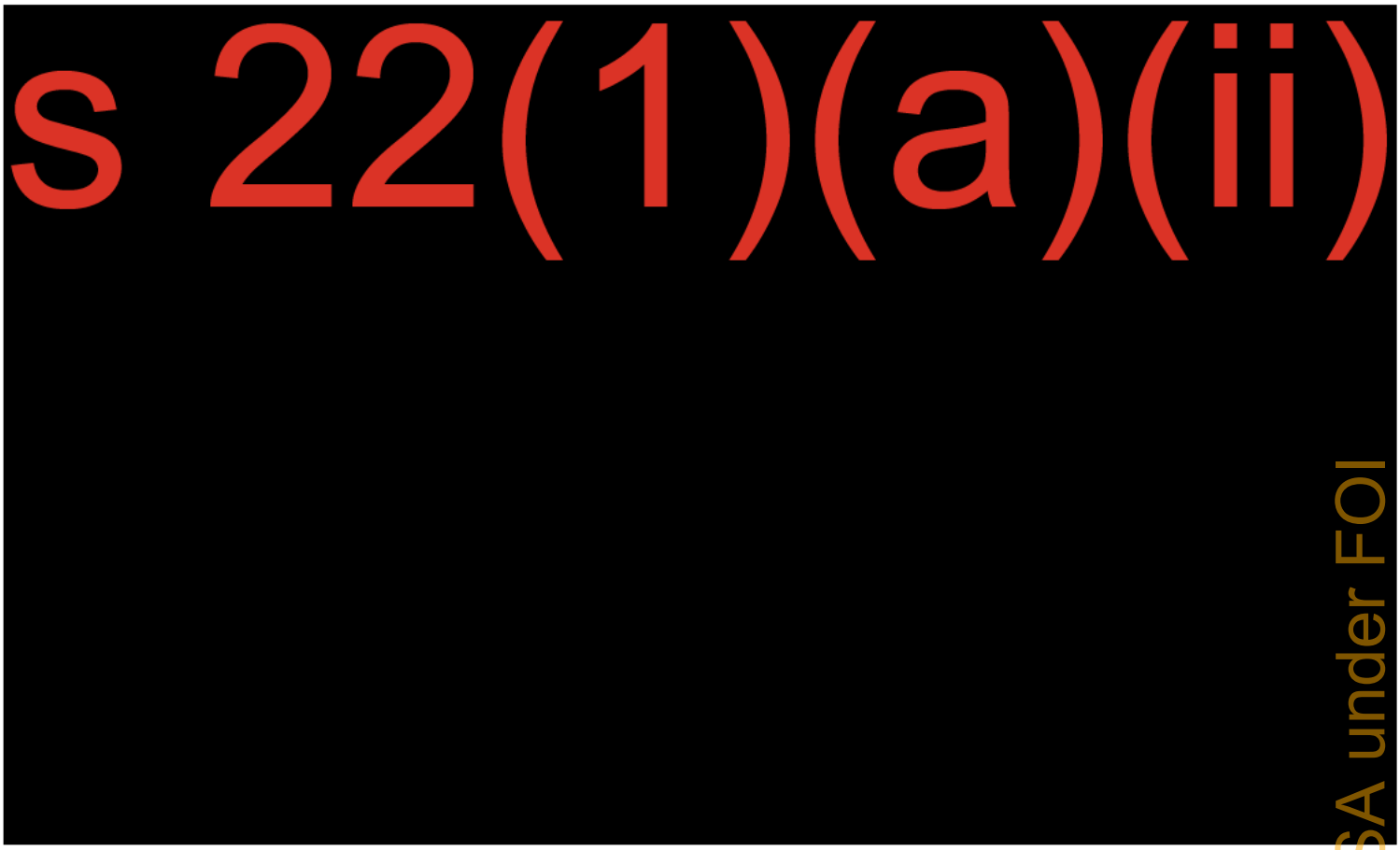
Released by ARPANSA under FOI



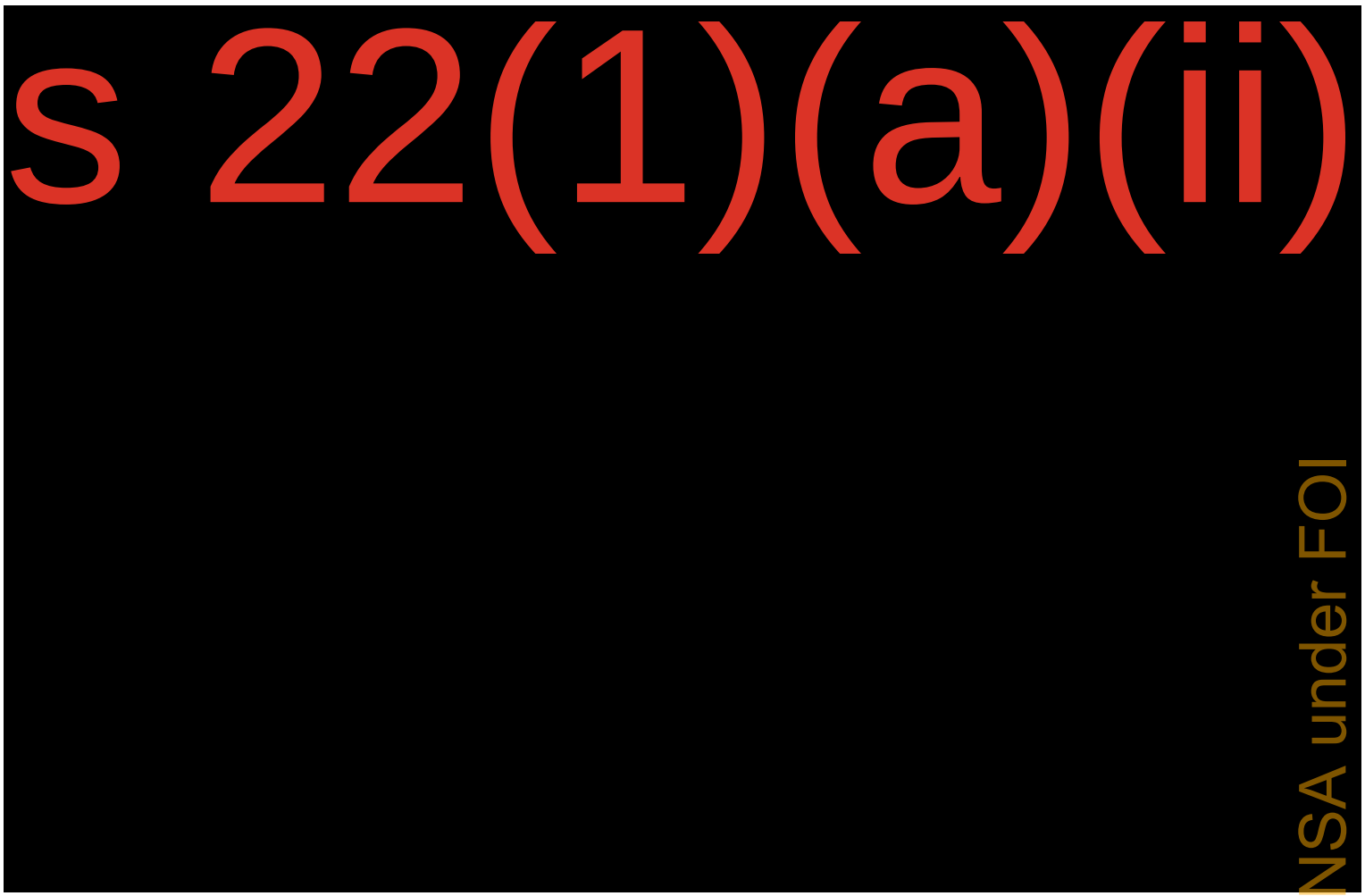
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Released by ARPANSA under FOI

Document 25

s 22(1)(a)(ii)

s 22(1)(a)(ii)

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From: s 22(1)(a)(ii) <s 22(1)(a)(ii)@arpansa.gov.au> **On Behalf Of** s 22(1)(a)(ii)
Sent: Saturday, 28 March 2026 9:43 AM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii)@dfat.gov.au>
Cc: s 22(1)(a)(ii) <s 22(1)(a)(ii)@arpansa.gov.au>
Subject: Courtesy update – IAEA USIE notifications from Iran [SEC=OFFICIAL:Sensitive]

OFFICIAL: Sensitive

Dear DFAT colleagues,

ARPANSA would like to make DFAT aware of recent reporting by Iran via the IAEA's Unified System for Information Exchange in Incidents and Emergencies (USIE) regarding military strikes on several sites, including one facility that contains radioactive sources, as well as strikes near nuclear infrastructure.

ARPANSA's initial assessment is that the reported incidents do NOT present a radiological risk to people or the broader region.

Information reported via USIE, together with ARPANSA's assessment where noted, is summarised below:

1. **Shahid Rezayee Nejad Yellow Cake Production Facility (Yazd province)**
   Iran has reported via USIE that this facility was subject to missile strikes. No increase in off-site radiation levels or environmental contamination has been detected, and there are no indications of any radiological release.
2. **Khuzestan Steel Production Factory**
   Iran has reported via USIE that this industrial facility, which uses sealed cobalt-60 and caesium-137 sources for industrial gauging, was subject to a missile strike.
   ARPANSA assessment: these sources are commonly used for monitoring level, density, thickness, and flow in industrial processes. They are relatively low in activity, sealed, and housed within substantial shielding. Based on the nature of these sources, a missile strike is unlikely to result in a radiological release. Iran has reported that radiological monitoring will be undertaken by local authorities as conditions permit.
3. **Bushehr Nuclear Power Plant**
   Iran has reported via USIE that a projectile struck *near* the Bushehr Nuclear Power Plant. No damage to the facility or injuries to personnel have been reported, and the plant is operating under normal conditions

At this stage, ARPANSA does not consider the reported incidents to present a radiological risk to the public or the broader region, and ARPANSA will continue to monitor IAEA and other authoritative reporting and provide updates should the situation change.

Kind regards,

s 22(1)(a)(ii)

EPR Duty Officer
Australian Radiation Protection and Nuclear Safety Agency

t: s 22(1)(a)(ii)
e: s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a)(ii) @arpansa.gov.au | s 22(1) @arpansa.gov.au
w: arpansa.gov.au

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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From our scientists to the world's first scientists, we respectfully acknowledge Traditional Owners and First Nations communities and their rich cultures. We recognise, respect and continue to learn from Indigenous sciences, and the deep understanding and observations of land, waters and sky carried and shared by First Nations peoples over thousands of years. | Artwork by Natalie L. Simmons

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Outlook

Document 26

RE: ARPANSA Radiation Assessment report 23/03/2026 [SEC=PROTECTED]

From s 22(1)(a)(ii) <s 22(1)(a)(ii)@dfat.gov.au>
Date Wed 25/03/2026 21:37
To ARPANSA - s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>
Cc ARPANSA - s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>

PROTECTED

OFFICIAL: Sensitive

Thanks s 22(1)(a)(ii), much appreciated.

s 22(1)(a)(ii)

s 22(1)(a)(ii)

Contingency Planning and Preparedness Section
Crisis Preparedness and Management Branch | Consular and Crisis Management Division
Department of Foreign Affairs and Trade
P s 22(1)(a)(ii) | M s 22(1)(a)(ii)
dfat.gov.au | X | Facebook | Instagram | LinkedIn



© Brooke Rigney-Lively (2024)
We acknowledge the Traditional Custodians of Country throughout Australia, and their continuing connection to land, waters and community. We pay our respects to all First Nations peoples, their cultures and to their Elders, past, present and emerging.

From: s 22(1)(a)(ii) s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>
Sent: Wednesday, 25 March 2026 4:32 PM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii)@dfat.gov.au>; s 22(1)(a)(ii) s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>
Cc: s 22(1)(a)(ii) s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>
Subject: RE: ARPANSA Radiation Assessment report 23/03/2026

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~~PROTECTED~~

OFFICIAL: Sensitive

Hi s 22(1)(a)(ii)

The plume modelling for the reactor locations included in the assessment report is performed six times per day at each location for a worst-credible case scenario to provide general coverage of weather conditions for the whole 24-hour period. The plume shown in the Radiation Assessment Report is typically the model output for 12 AEST, and is shown to provide familiarity with what a release from each site might look like for a given set of weather conditions. The distances given in the 'Protective actions' section in the 'Assessment' area of the report reflect a range of modelled outcomes and can be used for planning. In the event of an incident at the modelled sites, the model outputs for the closest times can be used to provide further advice on request from DFAT, while more information is collected and assessed regarding the incident and any potential release.

This automated modelling does take significant time and resources and has been prioritised for the Iran, Israel, and UAE sites. For planning purposes for the other countries mentioned, the best approach would be to apply protective action zones from similar sites. In the event of an incident at the sites, more detailed modelling can be conducted. For planning purposes, the following assessments may be used (note that these may differ from published planning zones for some sites based on the incident type assessed and different protective action criteria used by the country):

Country	Reactor Name	Reactor Type	Reactor Power (MWth)	Location	Operational	Site assessment
Pakistan	Karachi Nuclear Power Complex	Power Reactor	337, 3060, 3060	24.85241, 66.77510	Yes (2, 337MW in permanent shut down)	Protective actions required may be similar to the Bushehr and Barakah sites.
Pakistan	Chashma Nuclear Power Complex	Power Reactor	999, 999, 999, 999, 3180	32.38833, 71.46695	Yes (4, 3180 MWth under construction)	Protective actions required may be similar to the Bushehr and Barakah sites.
Pakistan	Pakistan Institute of Nuclear Science and Technology	Research Reactor	10	33.65314, 73.25988	Yes (1)	Protective actions required may be similar to the Soreq and Tehran sites
Pakistan	Pakistan Institute of Nuclear Science and Technology	Research Reactor	0.03	33.65361, 73.25835	Yes (1)	Protective actions would be limited to within several km of the site due to the small reactor size
Syria	Atomic Energy Commission of Syria	Research Reactor	0.03	33.50510, 36.27750	Yes (1)	Protective actions would be limited to within several km of the site due to the small reactor size
Armenia	Metsamor Nuclear Power Plant	Power Reactor	1375, 1375	40.18050, 44.14728	Yes (1, 1 permanent shutdown)	Protective actions required may be similar to the Bushehr and Barakah sites.
Iraq	Al Tuwaitha Nuclear Research Centre	Research Reactor	40, 5, 0.5	33.20319, 44.51848	No, permanently closed (3)	Not required, fresh and spent fuel and enriched uranium have been removed
Turkey	Akkuyu Nuclear Power Plant	Power Reactor	3200, 3200, 3200, 3200	36.14456, 33.53993	No (under Construction)	Not required, under construction
Turkey	ITU Energy Institute	Research Reactor	0.25	41.10838, 29.03075	Yes (1)	Protective actions would be limited to within several km of the site due to the small reactor size
Turkey	TENMAK Nuclear Energy Research Institute	Research Reactor	5	40.06055, 32.60411	Yes (1)	Protective actions required may be similar to the Soreq and Tehran sites

s 33(a)(ii)

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s 33(a)(ii)

Please let us know if you would like any further information and welcome a call to the duty officer phone number to further explain these details and help with planning arrangements where possible.

I'd also like to flag that ARPANSA will not have access to its protected environment (Fortress) this weekend (28-29 March). Please notify the duty officer phone if there are any communications that need attention.

s 22
Science Officer/EPR Duty Officer
Health Physics Measurements
Radiation Health Services
Australian Radiation Protection and Nuclear Safety Agency

t: s 22
m: s 22
w: arpansa.gov.au

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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From our scientists to the world's first scientists, we respectfully acknowledge Traditional Owners and First Nations communities and their rich cultures. We recognise, respect and continue to learn from Indigenous sciences, and the deep understanding and observations of land, waters and sky carried and shared by First Nations peoples over thousands of years. | Artwork by Natalie L. Simmons

OFFICIAL: Sensitive

PROTECTED

Classified by s 22 @dfat.gov.au on 24/03/2026 4:51:34 PM

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s 22 [redacted] s 22 [redacted]

From: s 22 [redacted] <s 22 [redacted]@dfat.gov.au>
Sent: Tuesday, 24 March 2026 4:52 PM
To: s 22 [redacted] - s 22 [redacted] <s 22 [redacted]@protected.arpansa.gov.au>
Cc: s 22 [redacted] - s 22 [redacted] <s 22 [redacted]@protected.arpansa.gov.au>
Subject: RE: ARPANSA Radiation Assessment report 23/03/2026 [redacted]

OFFICIAL: Sensitive

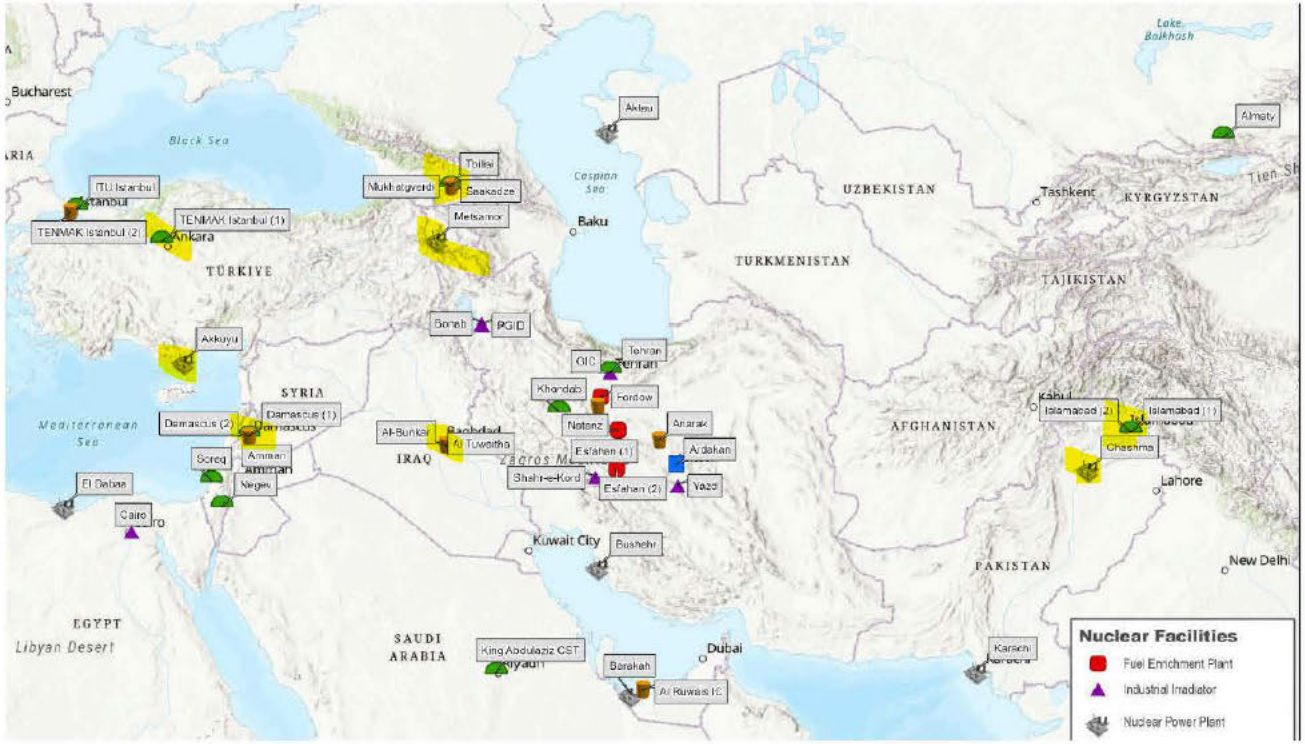
[redacted]

Hi, further to the attached reporting, would it possible to receive modelling for Pakistan, Türkiye, Syria, Armenia and Iraq.

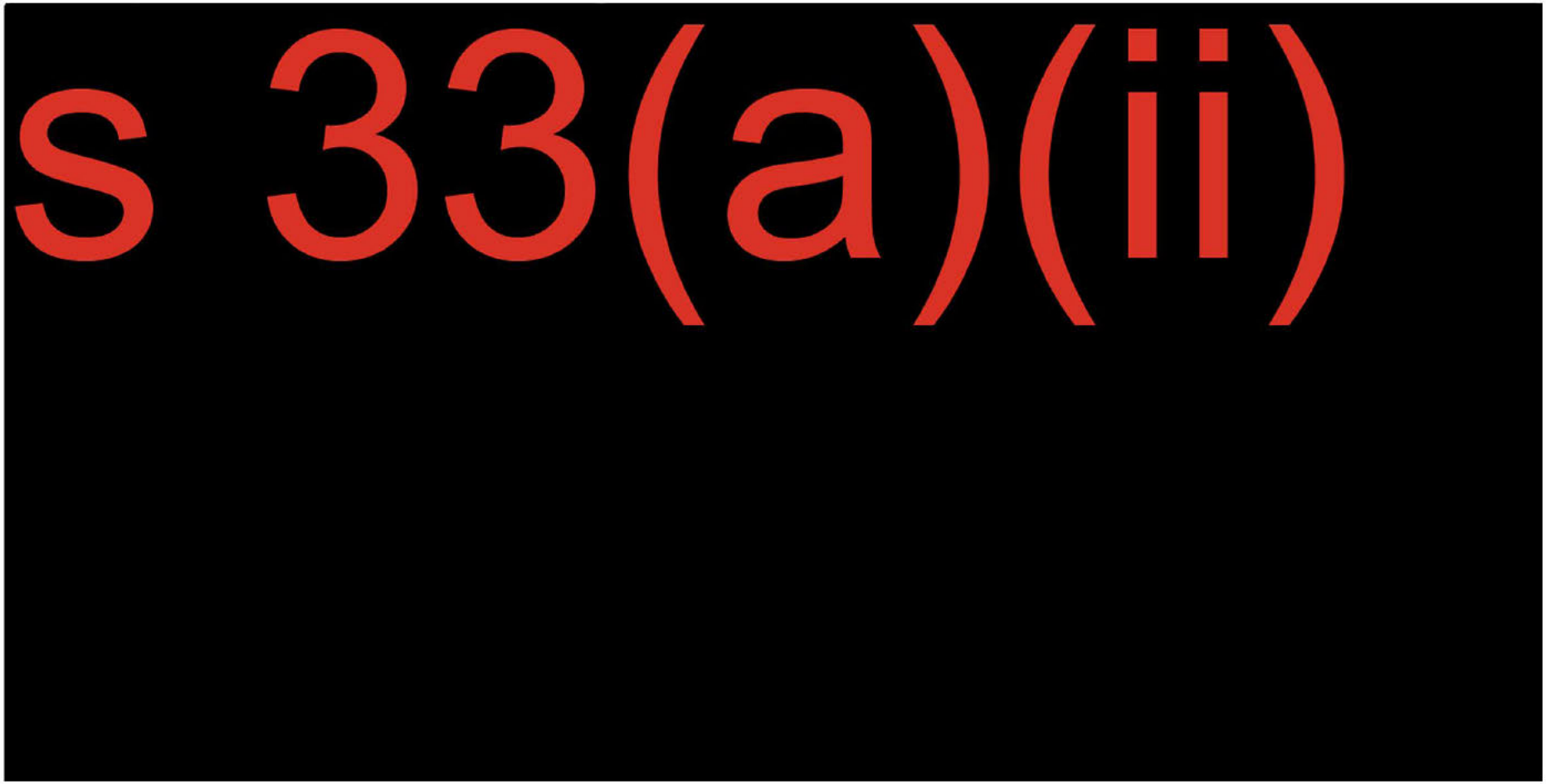
s 33(a)(ii) [redacted]

Thanks for all your help with this.

s 22(1)(a)(ii) [redacted]



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From: s 22(1)(a)(ii) s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>
Sent: Monday, 23 March 2026 6:17 PM
To: s 22(1)(a)(ii) <s 22(1)(a)(ii)@dfat.gov.au>
Cc: s 22(1)(a)(ii) s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>; s 22(1)(a)(ii) - s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>
Subject: ARPANSA Radiation Assessment report 23/03/2026 [s 22(1)(a)(ii)]

OFFICIAL: Sensitive

[s 22(1)(a)(ii)]

Hi [redacted]

ARPANSA has updated its radiation assessment report following events over the weekend.
Attached is a map encompassing the broader MER and radiological sites which can be distributed at the Official:sensitive level.
I have also attached our updated radiation assessment report with additional detail on some of the modelling scenarios.

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These products are always able to be improved upon so if there's more detail in an area or a clearer explanation of something, let us know and we'll implement it in future assessment reports.

Regards,

s 22(1)(a)(ii) (EPR - Duty Officer)

OFFICIAL: Sensitive

Classified by s 22(1)(a)(ii) @protected.ansa.gov.au on 23/03/2026 6:15:40 PM

s 22(1)(a)(ii)

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Document 27

[redacted]

[redacted]

[redacted]

From: S 22(1)(a)(ii)
Sent: Monday, 23 March 2026 9:00 AM
To: S 22(1)(a)(ii)
[redacted]
Cc: S 22(1)(a)(ii)
[redacted]
Subject:
Importance: High

~~SECRET~~ OFFICIAL:Sensitive

Colleagues, we continue to watch closely the conflict in the MER.

We are keen to understand the risks related to nuclear facilities in the MER S 33(a)(ii) and S 33(a)(iii) [redacted].

RFIs:

1. Could ARPNSA please provide the locations of nuclear facilities in the MER S 33(a)(ii) and S 33(a)(iii) [redacted]
3. Should one of these facilitates be successfully targeted, **what is the most likely to the most dangerous scenario we might expect to see** including any plume modelling that you may be able to share with us? S 33(a)(ii) and S 33(a)(iii) [redacted]

Thank you.

[redacted]

[redacted]

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s 22(1)(a)(ii)

Document 28

s 22(1)(a)(ii)

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From: ARPANSA - s 22(1)(a)(ii) <[redacted]@protected.arpansa.gov.au>
Sent: Thursday, 9 April 2026 14:00
To: s 22(1)(a)(ii) <s 22(1)(a)(ii)@dfat.gov.au>; ARPANSA - s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>
Cc: ARPANSA - s 22(1)(a)(ii) <s 22(1)(a)(ii)@protected.arpansa.gov.au>; [redacted] <[redacted]@dfat.gov.au>; Alan Copeland <Alan.Copeland@dfat.gov.au>; [redacted] <s 22(1)(a)(ii)@dfat.gov.au>; [redacted] <[redacted]@dfat.gov.au>
Subject: Re: ARPANSA Radiation Assessment report 23/03/2026:seeking update on Bushehr NPP ~~[SEC=PROTECTED]~~

~~PROTECTED~~

OFFICIAL: Sensitive

Hi s 22(1)(a)(ii),

s 22(1)(a)(ii)

The short answer to your question is that this report does not change our modelling for Bushehr.

s 22(1)(a)(ii)

These strikes reinforce our modelling basis as the strikes occurring pose a risk of creating a Loss Of Offsite Power (LOOP) which is the basis for our modelling scenario. Our basis is more conservative than the risk posed by strikes at the NPP area boundary as our scenario doesn't include Emergency Diesel Generators (EDGs) restoring the lost power.

s 22(1)(a)(ii)

From: s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>
Sent: Wednesday, 8 April 2026 08:44
To: ARPANSA - s 22(1)(a)(ii) <s 22(1)(a)(ii) @protected.arpansa.gov.au>
Cc: ARPANSA - s 22(1)(a)(ii) <s 22(1)(a)(ii) @protected.arpansa.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>; Alan Copeland <Alan.Copeland@dfat.gov.au>; s 22(1)(a)(ii) s 22(1)(a)(ii) <s 22(1)(a)(ii) @dfat.gov.au>; s 22(1)(a)(ii) <s 22(1)(a)(ii) s@dfat.gov.au>
Subject: RE: ARPANSA Radiation Assessment report 23/03/2026:seeking update on Bushehr NPP ~~[SEC=PROTECTED]~~

~~PROTECTED~~

OFFICIAL: Sensitive

~~PROTECTED~~

Hi, overnight cable from Vienna copied below. Checking in to see if there are any changes to the modelling for Bushehr NPP given reporting? Copying in your assessment of 23 March.

Thanks,
s 22(1)(a)(ii)
//

OFFICIAL:Sensitive
Cable overview
Title: s 33(a)(iii)
MRN: s 22(1)(a)(ii)
Sent: 08/04/2026, 1:39:31 am
To: Canberra
Cc: Geneva UN, IAEA Board of Governors (2025-26), London, Tehran, Tel Aviv, UN New York, Washington
From: Vienna UN
Approved by: s 22(1)(a)(ii)
Response: Routine, Information Only
Cable annotations
s 22(1)(a)(ii)
Cable summary

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s 22(1)(a)(ii)

s 33(a)(iii)

Comment

s 33(a)(iii)

//

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s 22(1)(a)(ii)

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s 22(1)(a)(ii)

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Document 29

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

Time/date of this report: 20 June 2025 10:00 AEST

Israel has conducted a series of attacks in Iran since 13 June 2025 including strikes on an Iranian nuclear sites at Natanz, Isfahan and Fordow. Israel has claimed these facility strikes were intended to curb Iran's nuclear program. The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Isfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Several small research reactors are also located at the site.

Modelling indicates that off-site radiological consequences from an incident at these sites would not be significant. This is consistent with IAEA statements that radiation levels have not increased off-site as a result of the military strikes. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the missile strikes.

Two centrifuge production facilities in Karaj near Tehran have also been damaged in strikes. These facilities manufactured parts for centrifuges and do not represent a radiological hazard. The Arak heavy water research reactor, under construction, was damaged in strikes. It is not operational and contained no nuclear material and does not represent a radiological hazard.

Iran has launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. Of these sites, the greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel.

Credible worst-case scenarios for Bushehr and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

KEY MESSAGES

- Missile strikes by Israel have caused damage to Iranian nuclear facilities
- IAEA reports no increase in off-site radiation levels around these facilities
- Modelling indicates that off-site radiological consequences from an incident at the targeted sites would not be significant
- Bushehr Nuclear Power Plant in Iran has not been targeted.
- Strikes at Arak reactor construction site and Karaj manufacturing facilities do not pose a radiological hazard
- Radiological risk to the Australian embassies in Tehran and Tel Aviv is very low due to the distance from major nuclear facilities.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

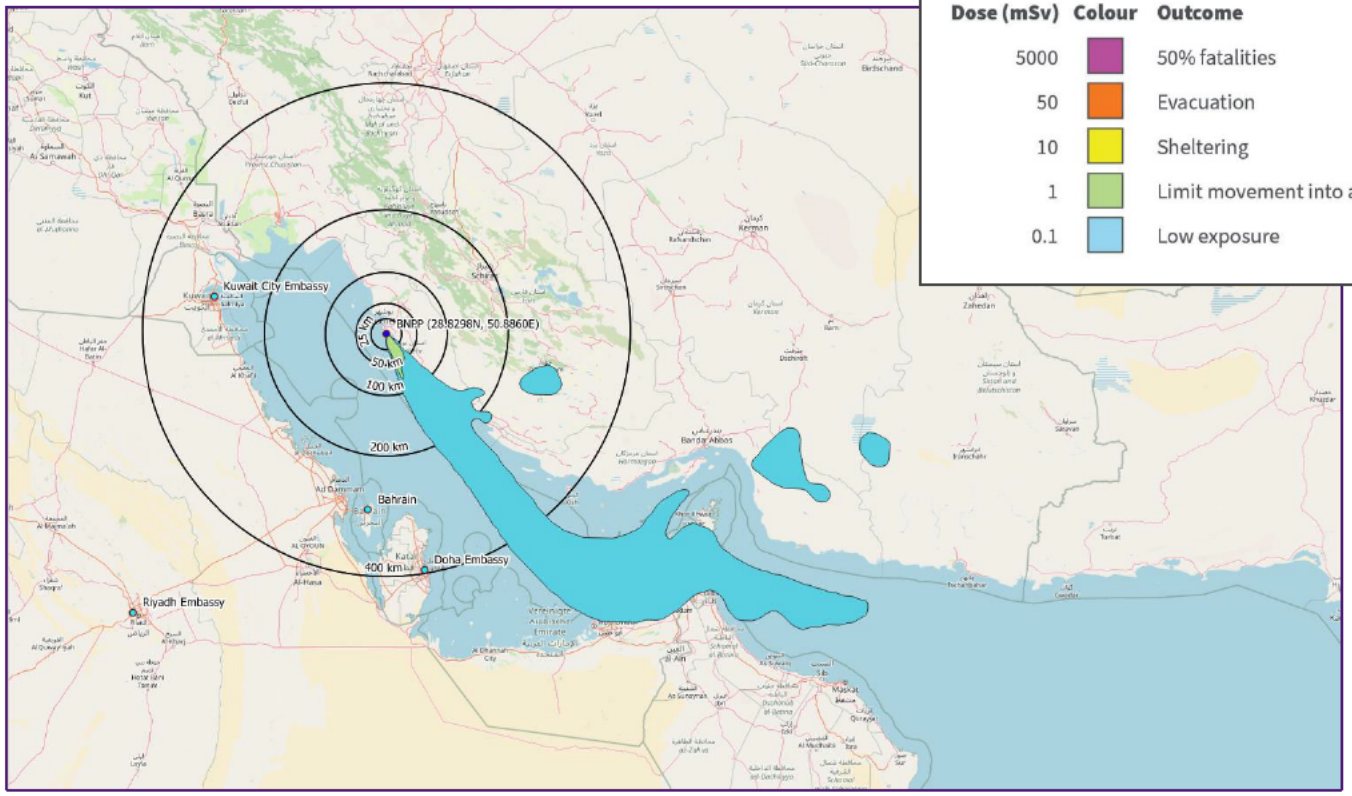
ARPANSA DUTY OFFICER

s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a)(ii)

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

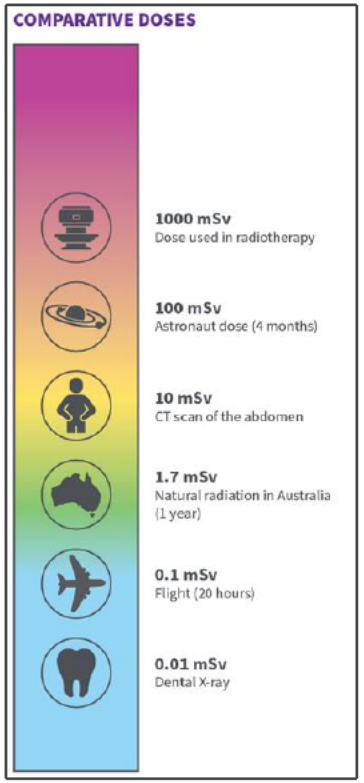
HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran



LEGEND – FALLOUT UNSHIELDED

Dose (mSv)	Colour	Outcome
5000		50% fatalities
50		Evacuation
10		Sheltering
1		Limit movement into area
0.1		Low exposure

COMPARATIVE DOSES



Modelled release at 12:00 AEST 20 June 2025

Model generated at 08:30 AEST on 20 June 2025

Figure 1

RELEASE SCENARIO

Postulated scenario of a Station Black out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 3000 MWt.

COMMENTS

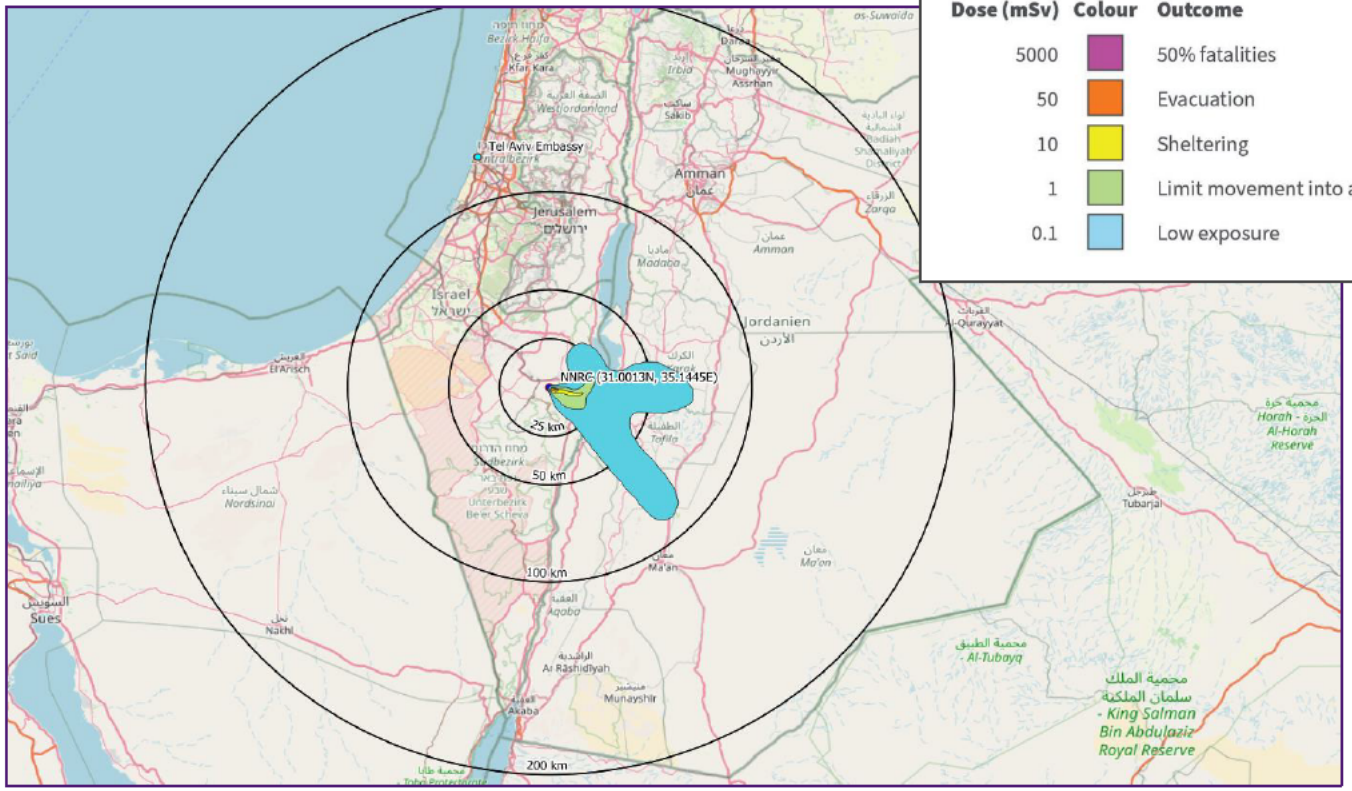
Atmospheric modelling at this time shows plume direction to the south and south-east of the site. The simulation shows that protective actions such as sheltering in place or the issue of stable iodine tablets may be required up to 50 km from the site. Evacuation of some areas may be required up to 10 km from the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.
Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

Note: The Bushehr Nuclear Power Plant generates approximately 1.7% of the annual electricity produced in Iran.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

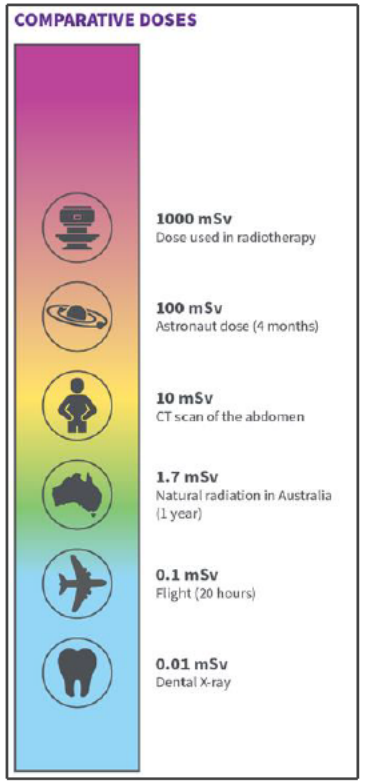
HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



LEGEND – FALLOUT UNSHIELDED

Dose (mSv)	Colour	Outcome
5000		50% fatalities
50		Evacuation
10		Sheltering
1		Limit movement into area
0.1		Low exposure

COMPARATIVE DOSES



Modelled release at 12:00 AEST 20 June 2025

Model generated at 08:30 AEST on 20 June 2025

Figure 2

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

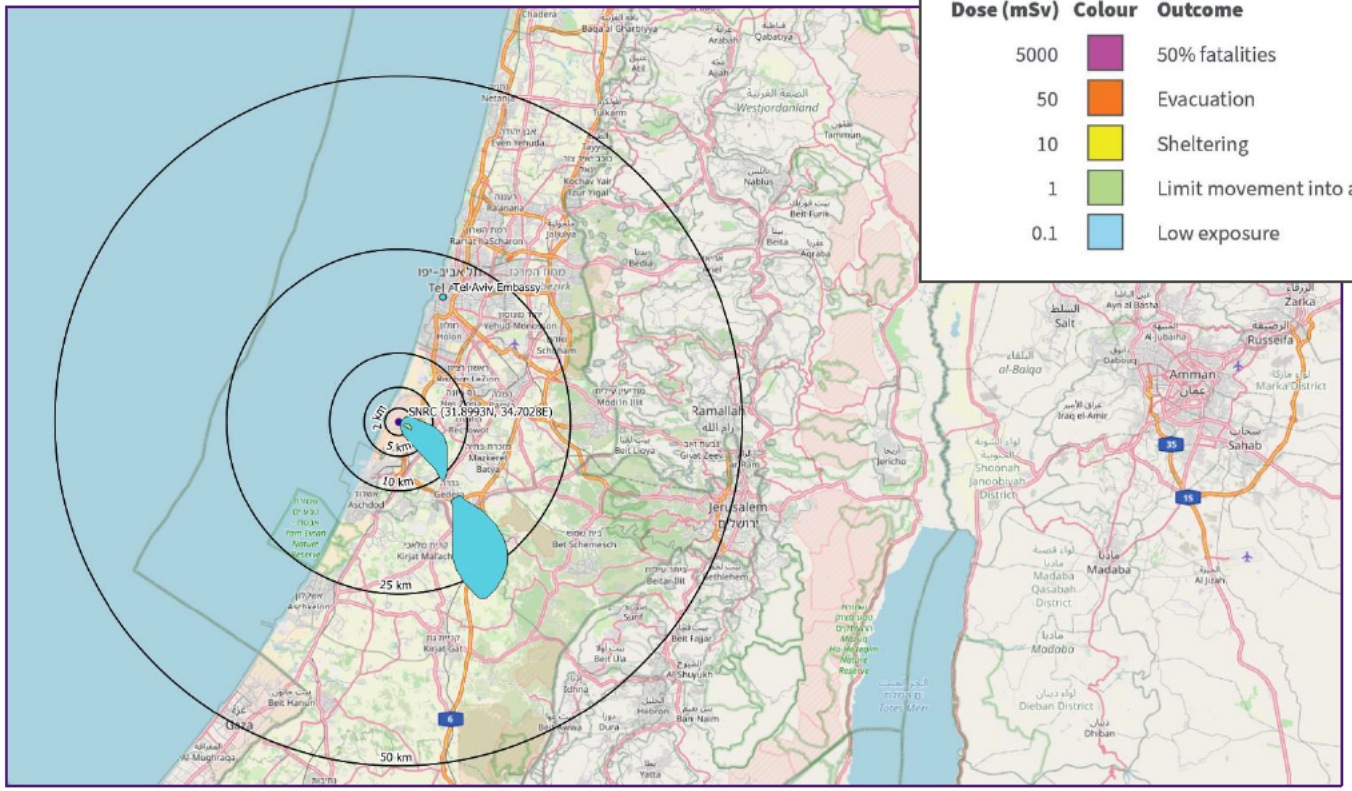
COMMENTS

Atmospheric modelling at this time shows plume direction to the east and south-east of the site. The simulation shows that consequences requiring protective actions such as sheltering in place or the issue of stable iodine tablets from this scenario are likely to be limited to less than 20 km. Evacuation may be required very close to the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

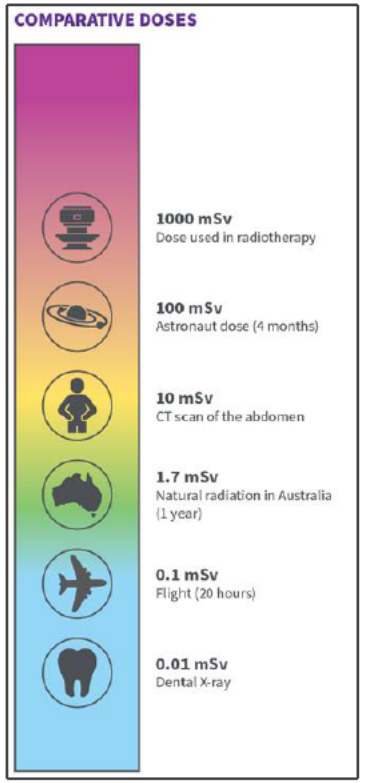
HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



LEGEND – FALLOUT UNSHIELDED

Dose (mSv)	Colour	Outcome
5000		50% fatalities
50		Evacuation
10		Sheltering
1		Limit movement into area
0.1		Low exposure

COMPARATIVE DOSES



Modelled release at 12:00 AEST 20 June 2025

Model generated at 08:30 AEST on 20 June 2025

Figure 3

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

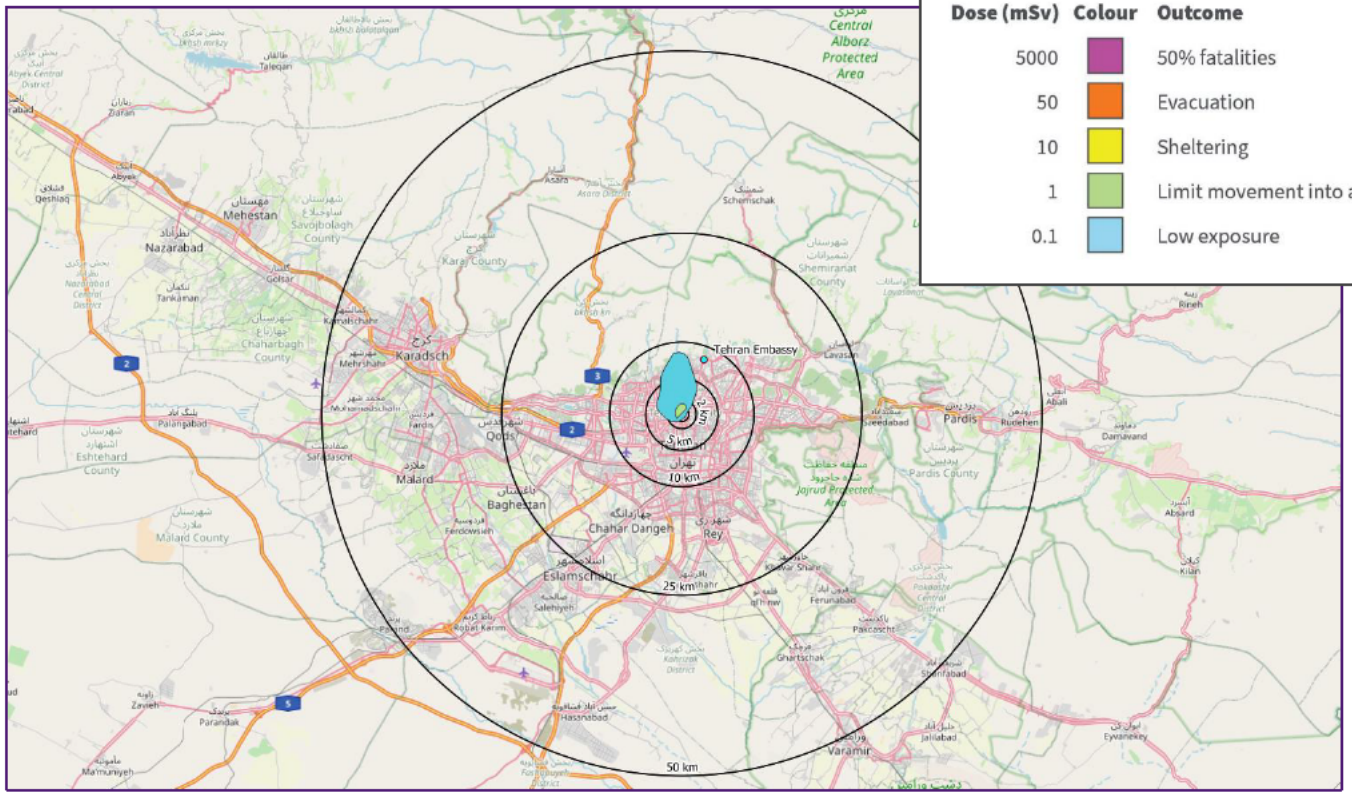
COMMENTS

Atmospheric modelling at this time shows plume direction to the south-east of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

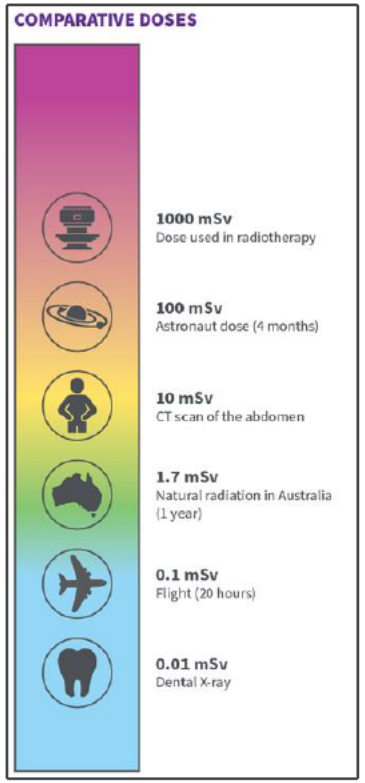
HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



LEGEND – FALLOUT UNSHIELDED

Dose (mSv)	Colour	Outcome
5000		50% fatalities
50		Evacuation
10		Sheltering
1		Limit movement into area
0.1		Low exposure

COMPARATIVE DOSES



Modelled release at 12:00 AEST 20 June 2025

Model generated at 08:30 AEST on 20 June 2025

Figure 4

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

COMMENTS

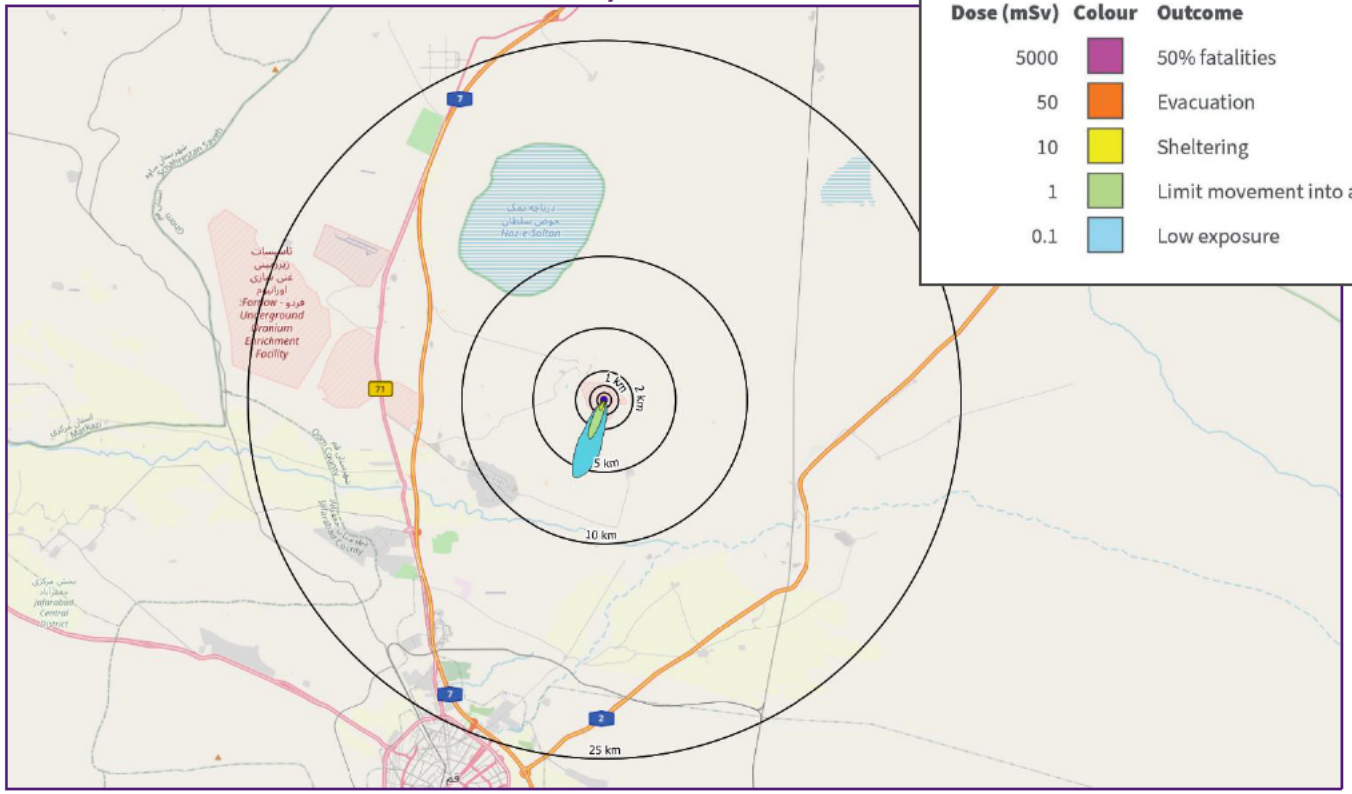
Atmospheric modelling at this time shows plume direction to the north of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

Radiological risk at the Australian embassy in Tehran is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any protective actions would be required at the embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

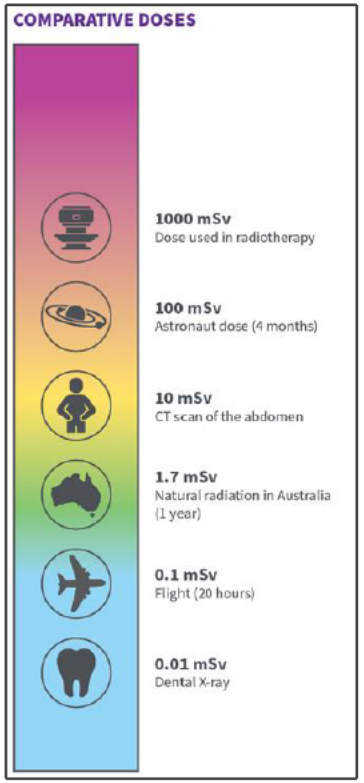
HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran



LEGEND – FALLOUT UNSHIELDED

Dose (mSv)	Colour	Outcome
5000		50% fatalities
50		Evacuation
10		Sheltering
1		Limit movement into area
0.1		Low exposure

COMPARATIVE DOSES



Modelled release at 12:00 AEST 20 June 2025

Model generated at 08:30 AEST on 20 June 2025

Figure 5

RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the south-west of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at the Fordow Nuclear Facility. This is consistent with IAEA statements that significant radiological contamination is limited to the site and can be appropriately managed with appropriate radiation protection methods.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

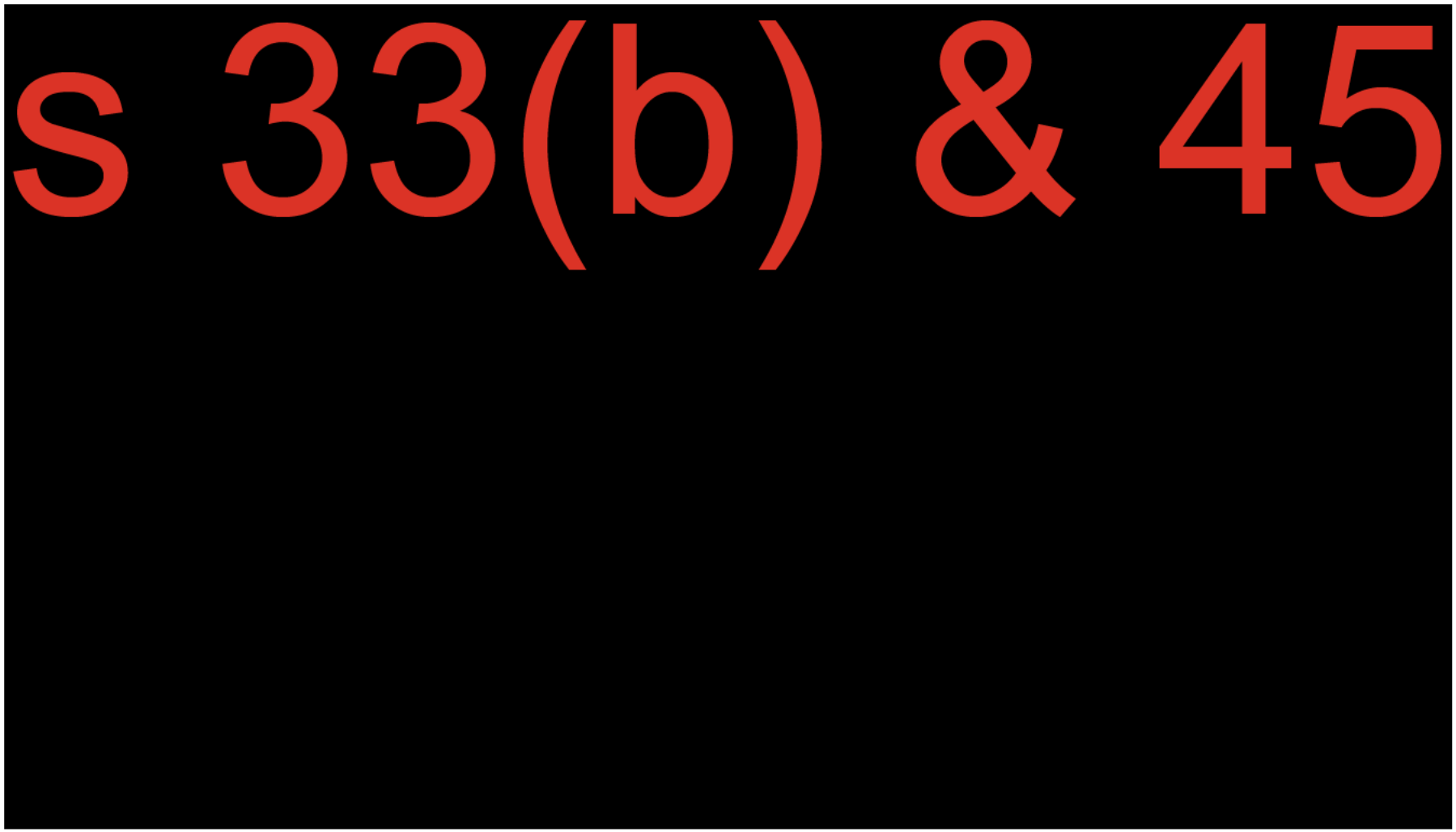
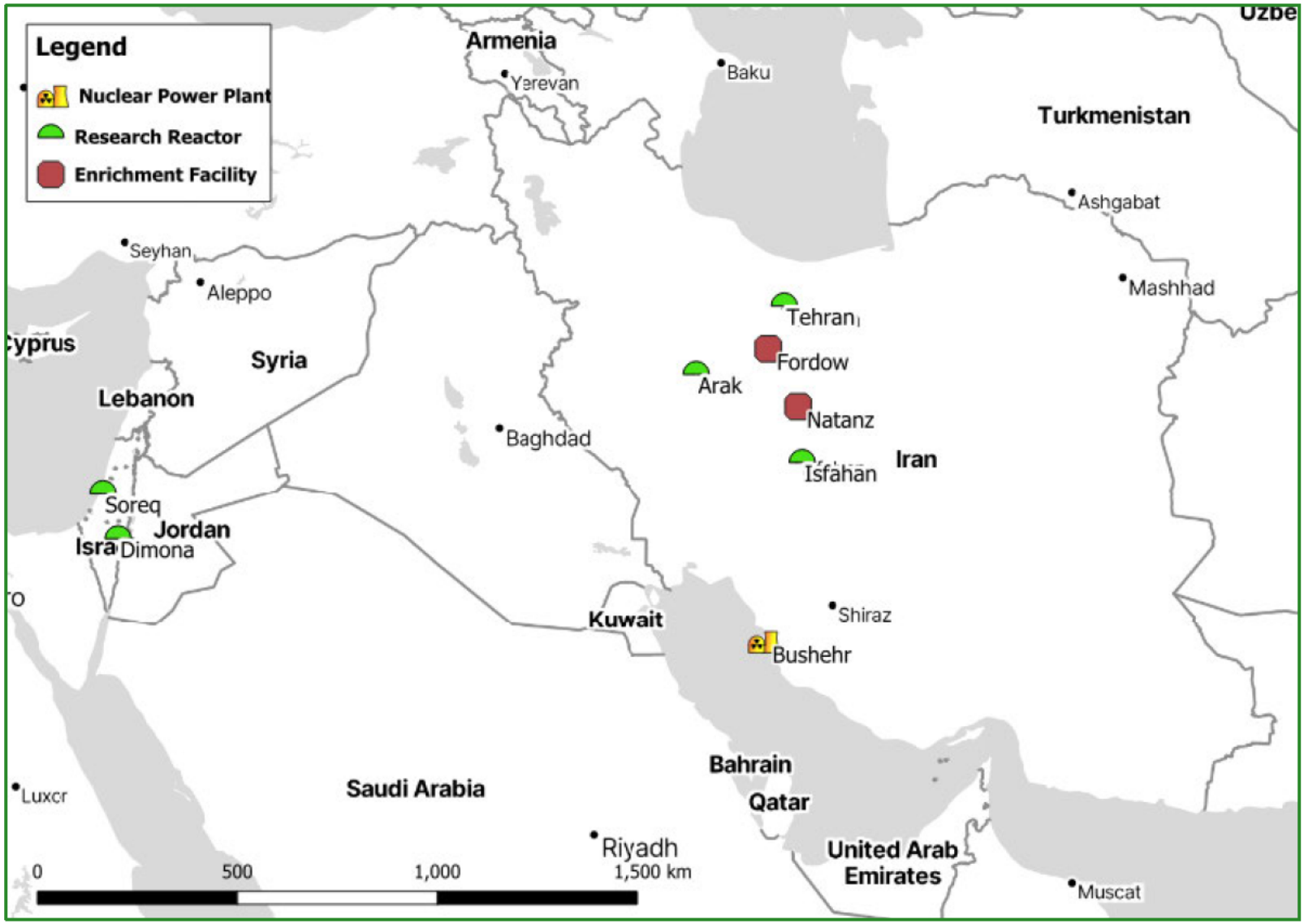


Figure 6 s 33(b) & 45

International Radiation Monitoring Information System (IRMIS)
A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel



Locations of nuclear facilities in Iran and Israel

Figure 7

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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Document 30

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

Time/date of this report: 21 June 2025 10:00 AEST

Israel has conducted a series of attacks in Iran since 13 June 2025 including strikes on an Iranian nuclear sites at Natanz, Isfahan and Fordow. Israel has claimed these facility strikes were intended to curb Iran's nuclear program. The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Isfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Several small research reactors are also located at the site.

Modelling indicates that off-site radiological consequences from an incident at these sites would not be significant. This is consistent with IAEA statements that radiation levels have not increased off-site as a result of the military strikes. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the missile strikes.

Two centrifuge production facilities in Karaj near Tehran have also been damaged in strikes. These facilities manufactured parts for centrifuges and do not represent a radiological hazard. The Arak heavy water research reactor, under construction, was damaged in strikes. It is not operational and contained no nuclear material and does not represent a radiological hazard.

Iran has launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. Of these sites, the greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel.

Credible worst-case scenarios for Bushehr and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

KEY MESSAGES

- Missile strikes by Israel have caused damage to Iranian nuclear facilities. IAEA reports no increase in off-site radiation levels around these facilities
- Modelling indicates that off-site radiological consequences from an incident at the targeted sites would not be significant
- IAEA DG Grossi's statement (on 20/06/25) on the Bushehr reactor and ARPANSA's assessment are not in conflict (see page 2 of this report)
- Strikes at Arak reactor construction site and Karaj manufacturing facilities do not pose a radiological hazard
- Radiological risk to the Australian embassies in Tehran and Tel Aviv is very low due to the distance from major nuclear facilities.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

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Comments regarding IAEA Director General Grossi Statements on Bushehr reactor

ARPANSA is aware of recent statemtent made by IAEA Director General Grossi regarding the consequences of a potential incident at the Bushehr reactor (https://www.iaea.org/newscenter/statements/iaea-director-general-grossis-statement-to-unsc-on-situation-in-iran-20-june-2025 -):

"Let me now refer to the Bushehr Nuclear Power Plant.....In case of an attack on the Bushehr Nuclear Power Plant a direct hit could result in a very high release of radioactivity to the environment."

"Similarly, a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt, which could result in a high release of radioactivity to the environment. In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres. Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented."

Is the statement in conflict to the assessments/briefings that ARPANSA are undertaking?

The short answer is no. The modelling assessments that ARPANSA has been undertaking are showing similar distances for protective actions as within the statement by DG Grossi. s 33(a)(iii) *"In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres."*

s 33(a)(iii) The distance band that he is referring to relates to a range of protective actions and encompasses the urgent and early protective actions. s 33(a)(iii) As shown by the table below taken from the IAEA Protection Strategy 2020 and IAEA Protective Actions 2013. The table (see lower right) shows that urgent actions would be required to a distance of around 30 km (this is the UPZ planning zone in the table). These actions are evacuation, sheltering and iodine tablets, using the IAEA criteria.

The ARPANSA modelling assessments show similar requirements for urgent protective actions. Some of our modelling is showing that actions such as sheltering may be required at distances of 10's of km from the Bushehr NPP.

The *"several hundred kilometres"* statement is in reference to the need to restrict the consumption of food and water. (this is the ICPD distance in the table) This is based on incurring a dose from ingestion over the year. s 33(a)(iii) Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented. This statement is referring to the protective actions out to that extended distance. Our modelling is showing similar distances for actions such as food restrictions.

On the part of the statement referring to the loss of offsite power *"a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt"*. While this is true to an extent, and there would be an enhanced risk of a reactor core meltdown, the reality is that there are several safety features in place that would limit this occurring. These include the use of diesel generators, back-up battery systems, emergency core cooling systems etc. Over the past years we have seen that the off-site power to the Zaporizhzhia Nuclear Power Plant in Ukraine has been lost, resulting in the use of back-up systems to maintain reactor safety.

KEY POINTS

- IAEA DG Grossi's statement and ARPANSA assessments are not in conflict
- DG Grossi' statement on protective actions is not referring to urgent actions such as evacuation being required out to several hundred kilometres.
- IAEA's guidance documents advise that urgent actions (e.g. sheltering) out to 10's of kms. ARPANSA assessment is similar to this.
- Food restrictions and monitoring may be required out to 'several hundred kms', the ARPANSA assessment shows similar for the action of food restrictions.
- Should the external power to the reactor be lost, there are many back-up systems that are used to maintain the safety of the reactor. Although it is not an ideal state for a nuclear reactor, the back-up systems mean that a core meltdown would not be an immediate concern.

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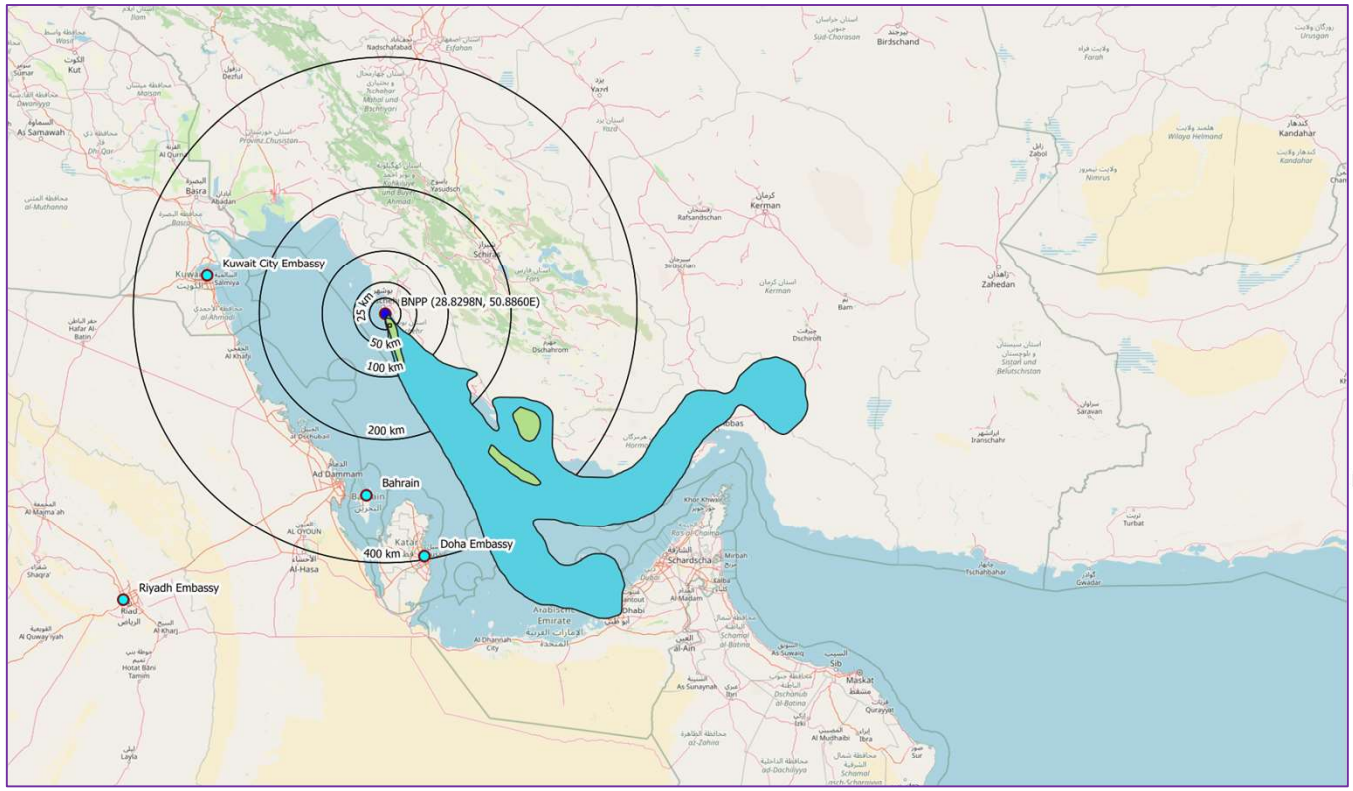
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TABLE I-1. APPROXIMATE RADII OF EMERGENCY PLANNING ZONES AND DISTANCES AROUND THE REACTOR SITES

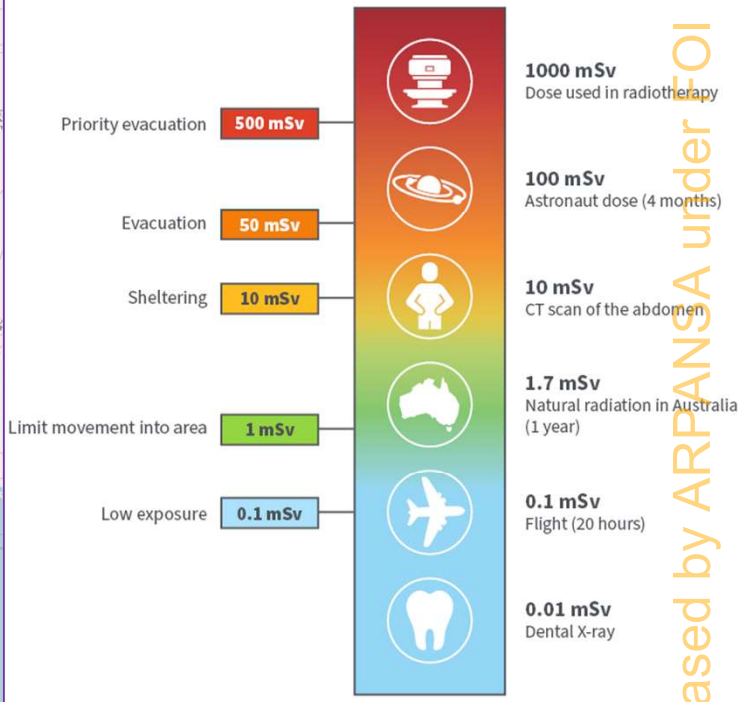
Emergency planning zones and distances	Approximate radii (km)	
	Nuclear Power Reactor (LWR, 2000 MW(th))	Research Reactor (100 MW(th))
PAZ	5	3
UPZ	30	15
EPD	100	50
ICPD	300	100

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran



LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



Modelled release at 12:00 AEST 21 June 2025

Model generated at 08:30 AEST on 21 June 2025

Figure 1

RELEASE SCENARIO

Postulated scenario of a Station Black out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 3000 MWt.

COMMENTS

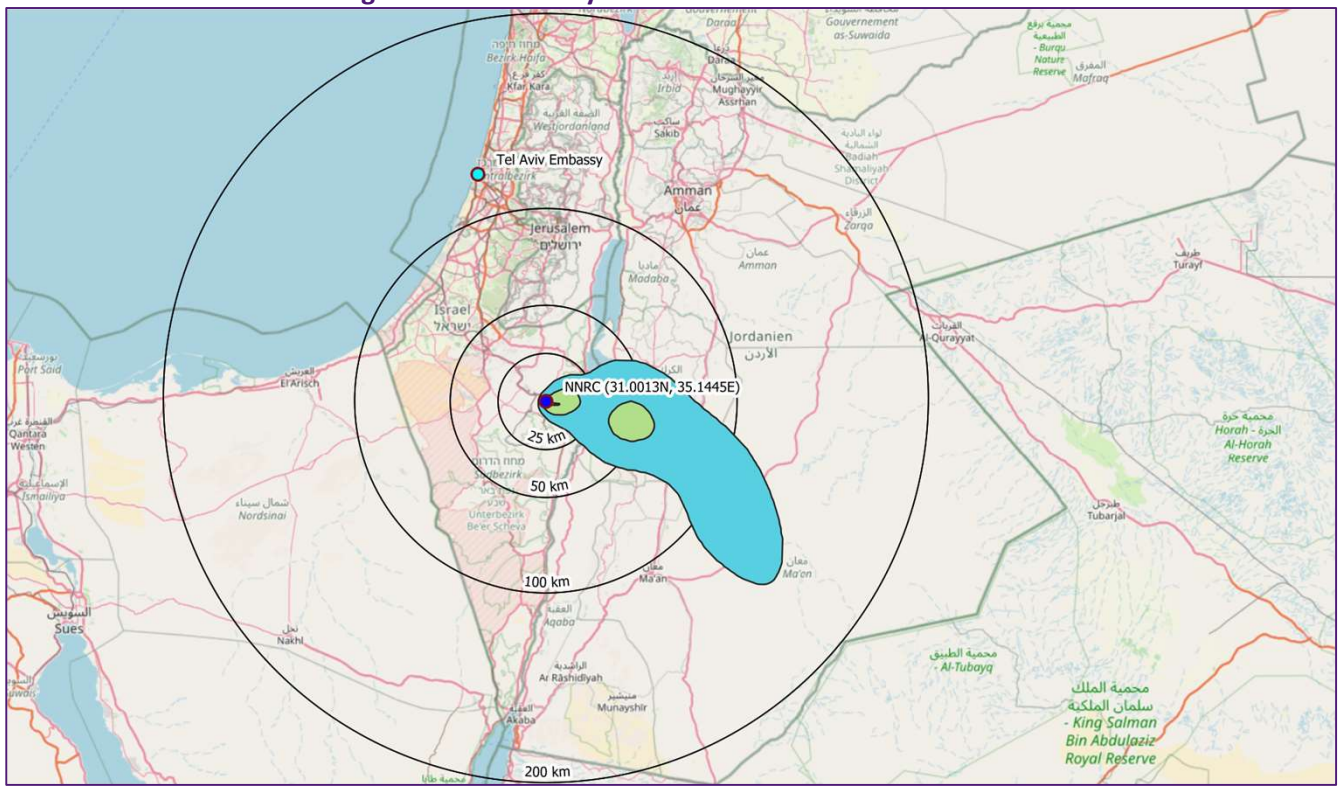
Atmospheric modelling at this time shows plume direction to the south and south-east of the site. The simulation shows that protective actions such as sheltering in place or the issue of stable iodine tablets may be required up to 50 km from the site. Evacuation of some areas may be required up to 10 km from the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.
Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

Note: The Bushehr Nuclear Power Plant generates approximately 1.7% of the annual electricity produced in Iran.

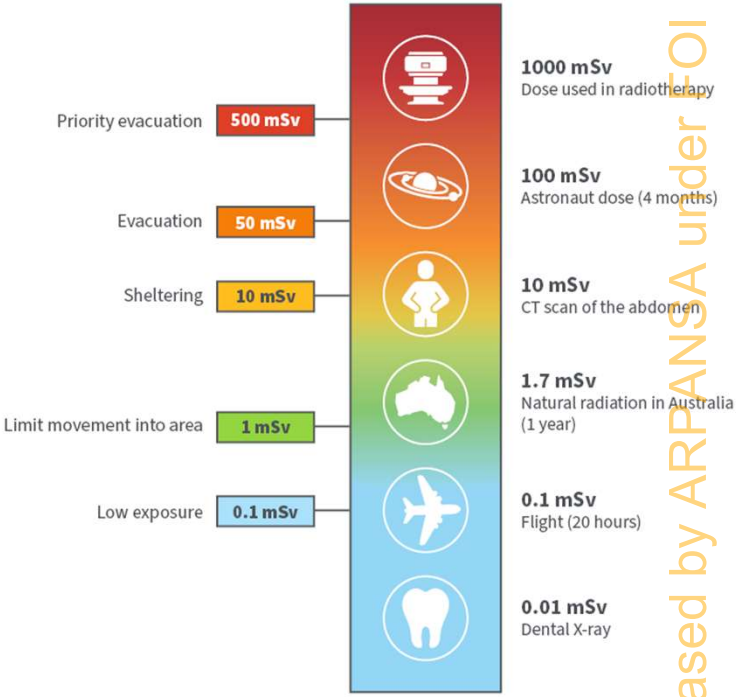
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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



Modelled release at 12:00 AEST 21 June 2025

Model generated at 08:30 AEST on 21 June 2025

Figure 2

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

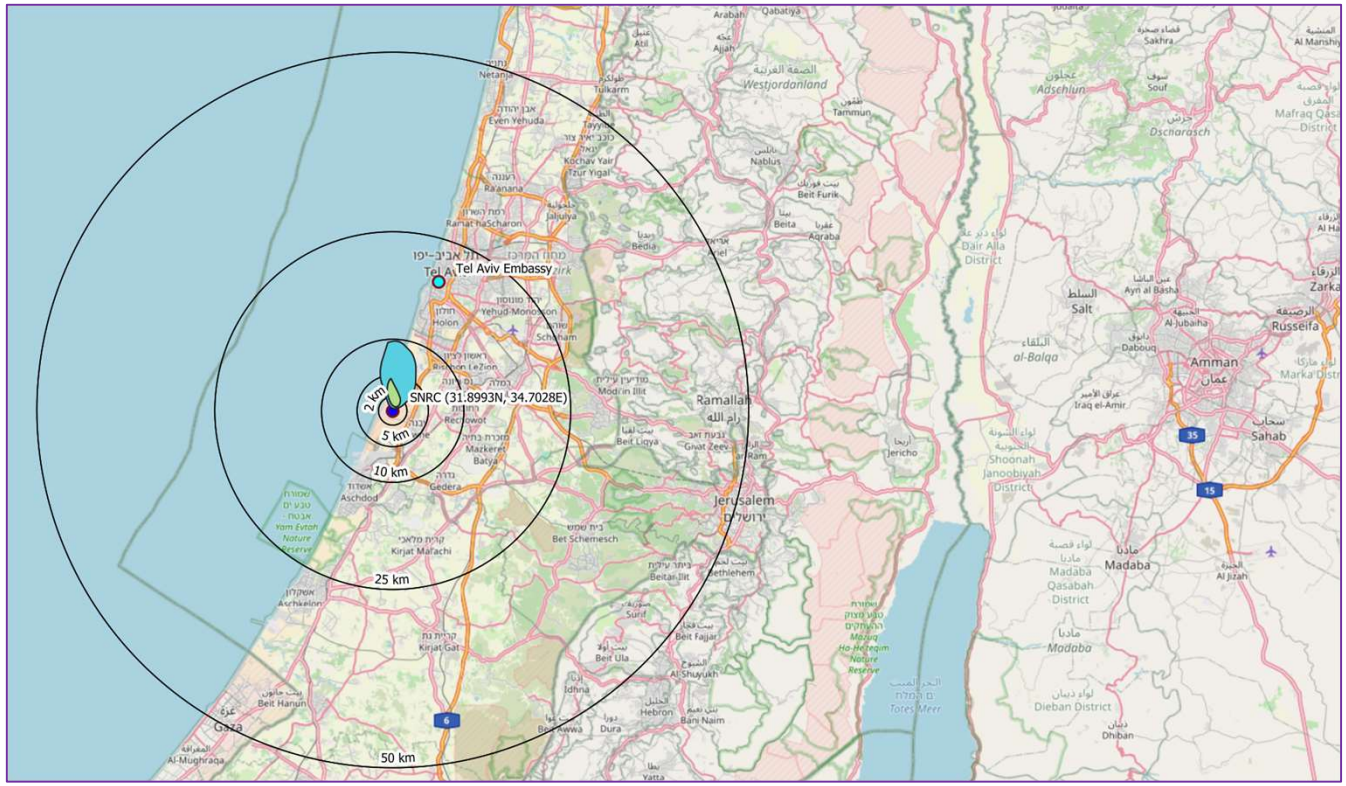
COMMENTS

Atmospheric modelling at this time shows plume direction to the east and south-east of the site. The simulation shows that consequences requiring protective actions such as sheltering in place or the issue of stable iodine tablets from this scenario are likely to be limited to less than 20 km. Evacuation may be required very close to the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel

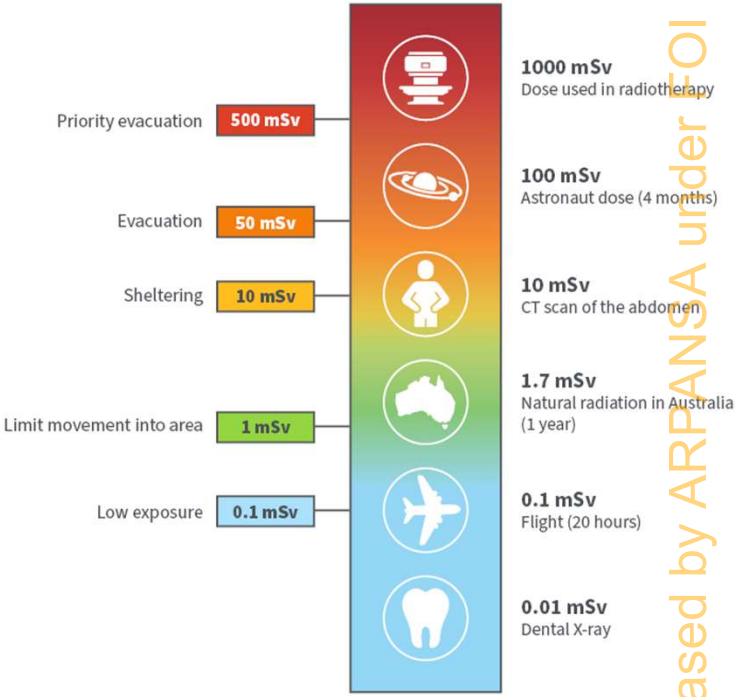


Modelled release at 12:00 AEST 21 June 2025

Model generated at 08:30 AEST on 21 June 2025

Figure 3

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

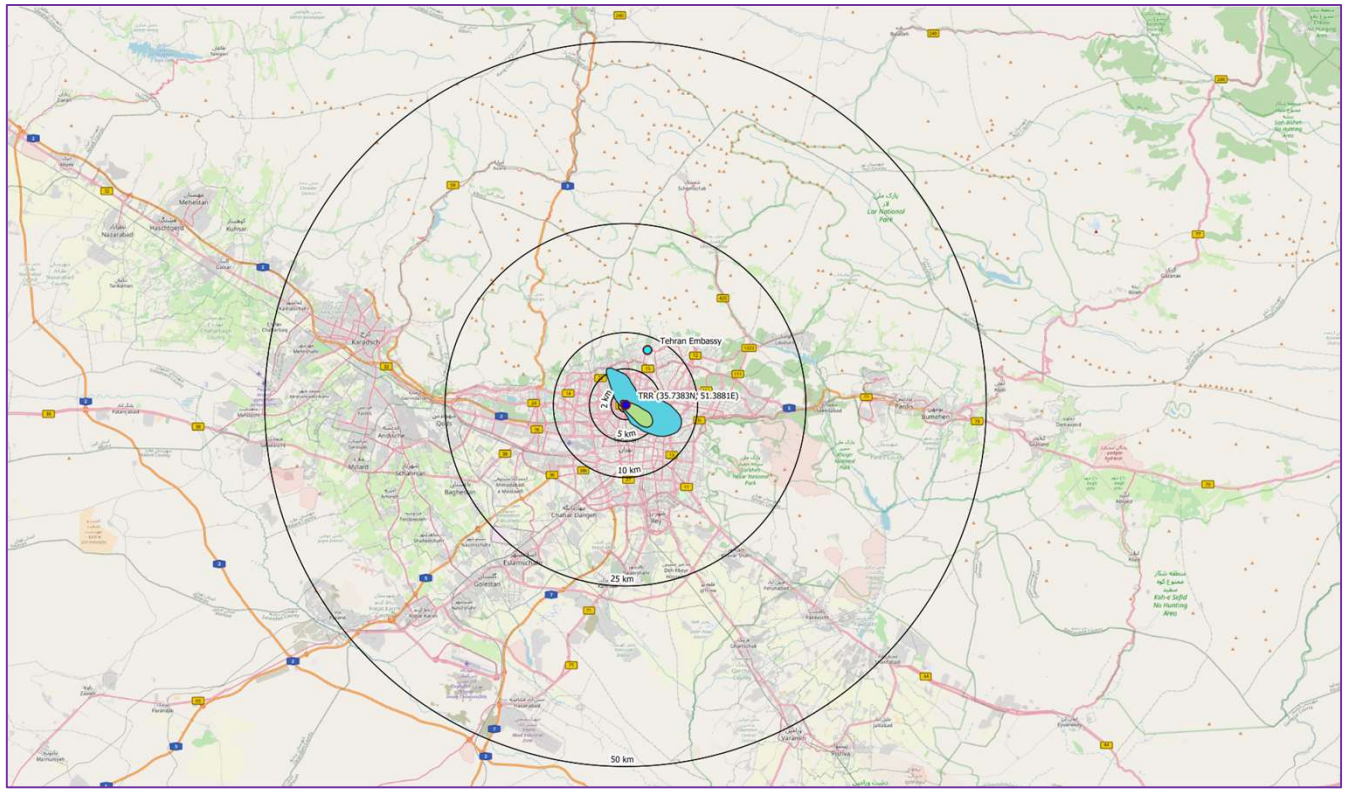
COMMENTS

Atmospheric modelling at this time shows plume direction to the north of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran

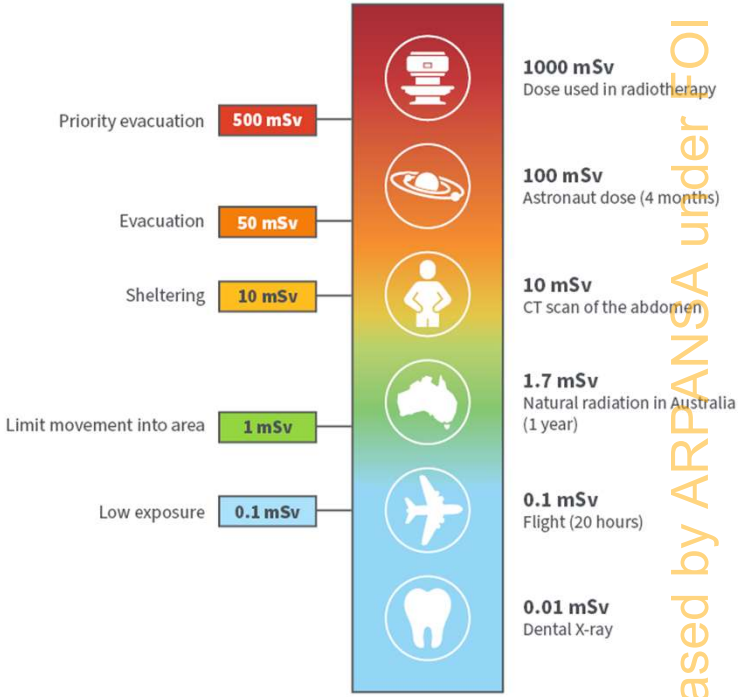


Modelled release at 12:00 AEST 21 June 2025

Model generated at 08:30 AEST on 21 June 2025

Figure 4

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

COMMENTS

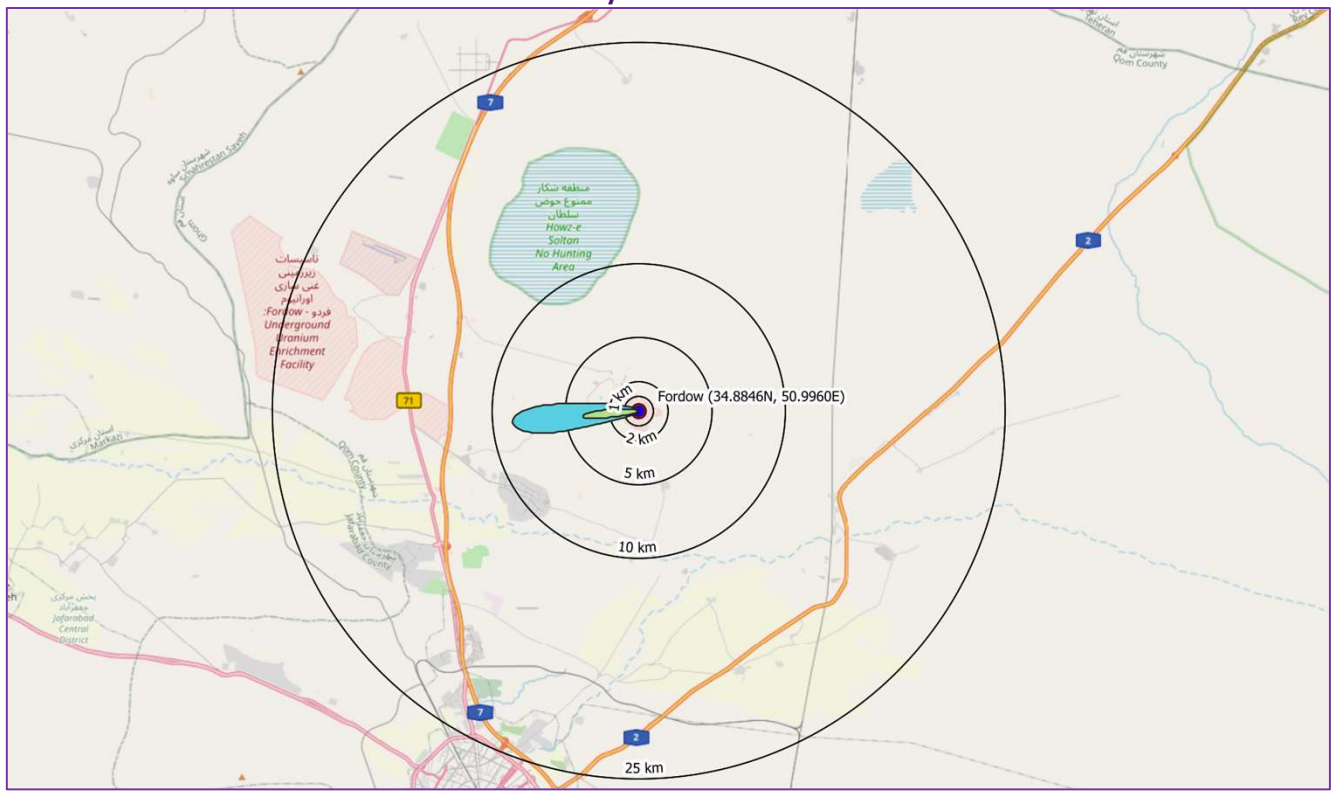
Atmospheric modelling at this time shows plume direction to the east and north-west of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

Radiological risk at the Australian embassy in Tehran is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any protective actions would be required at the embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran

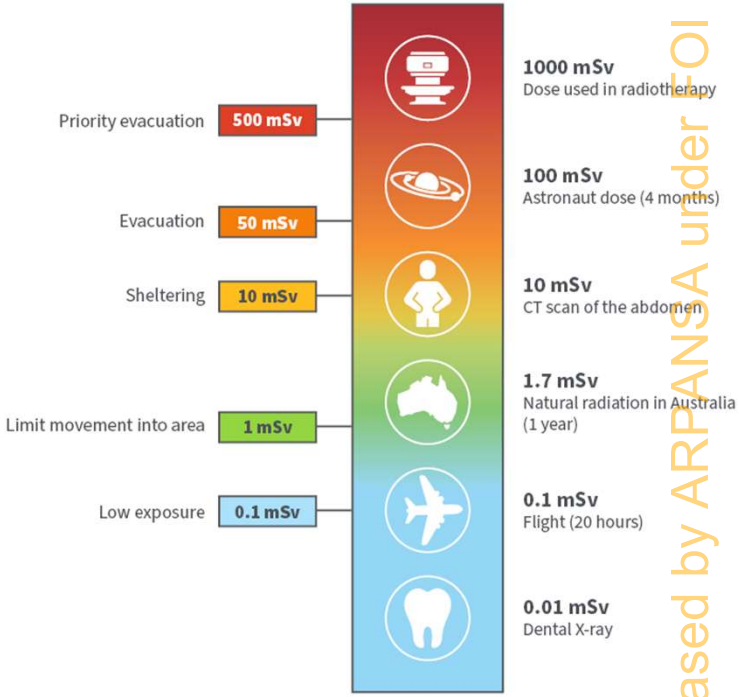


Modelled release at 12:00 AEST 21 June 2025

Model generated at 08:30 AEST on 21 June 2025

Figure 5

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the west of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at the Fordow Nuclear Facility. This is consistent with IAEA statements that significant radiological contamination is limited to the site and can be appropriately managed with appropriate radiation protection methods.

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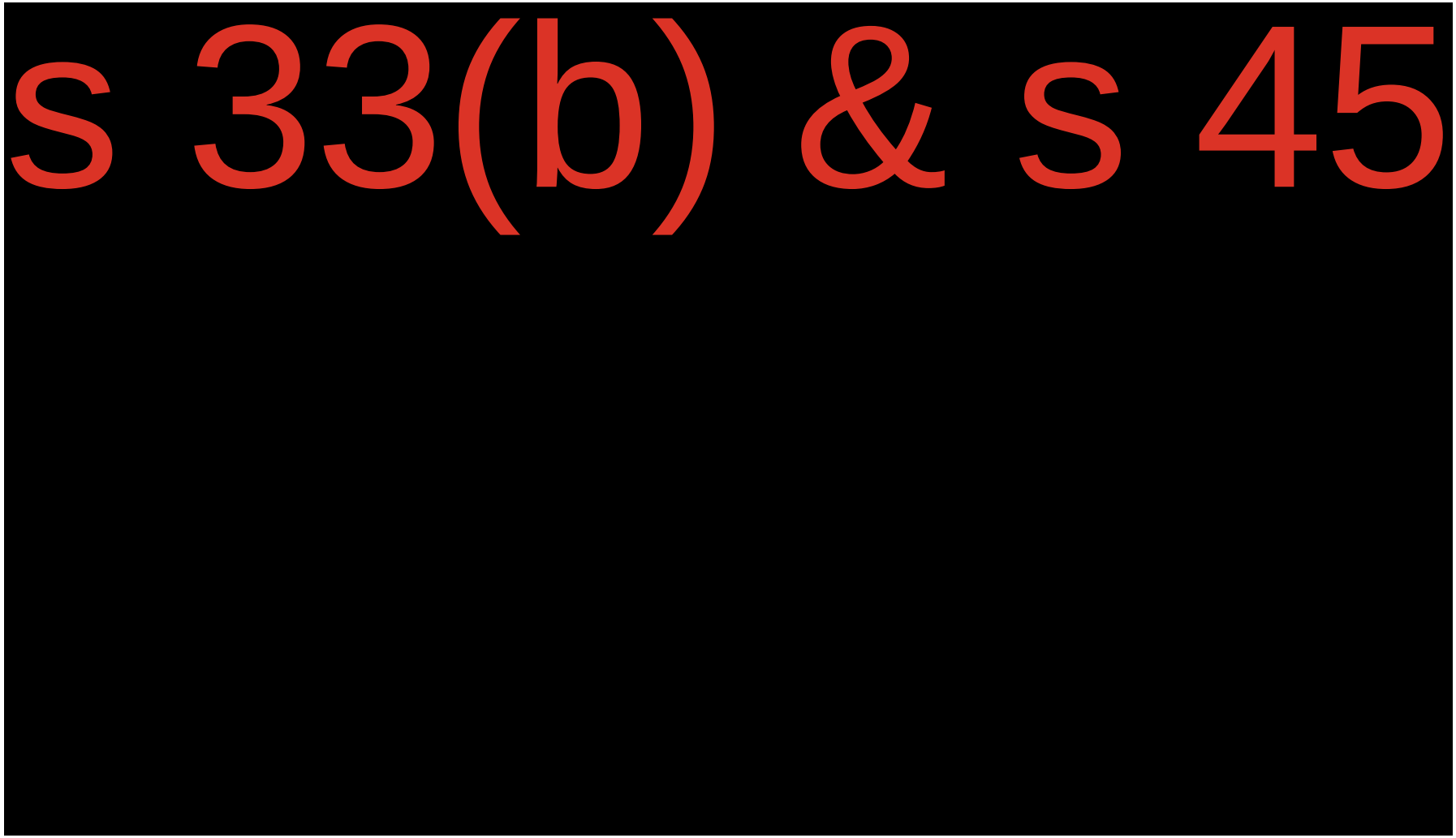
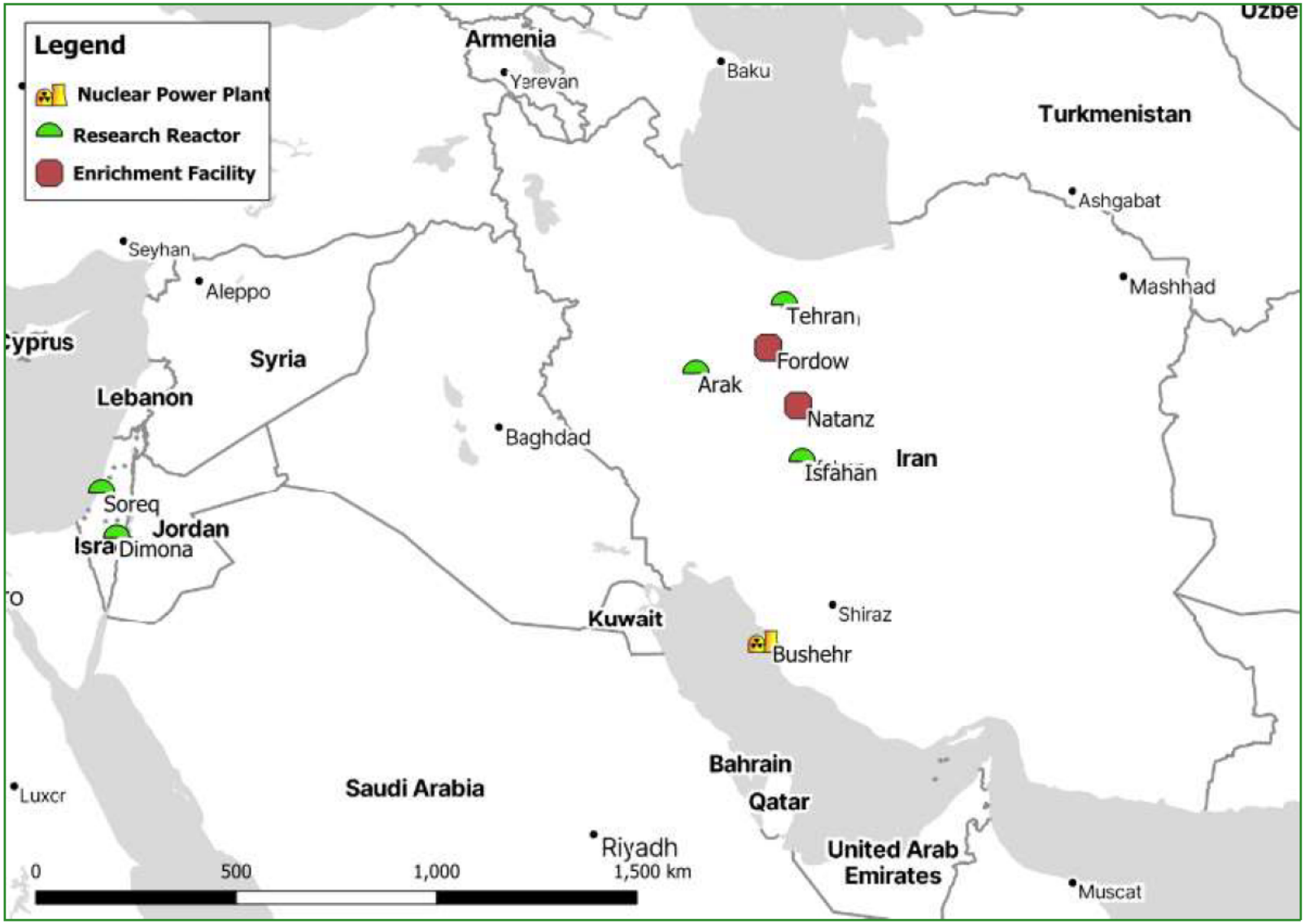


Figure 6 s 33(b) & s 45

International Radiation Monitoring Information System (IRMIS)
A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel



Locations of nuclear facilities in Iran and Israel

Figure 7

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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

Israel has conducted a series of attacks in Iran since 13 June 2025 including strikes on an Iranian nuclear sites at Natanz, Isfahan and Fordow. Israel has claimed these facility strikes were intended to curb Iran's nuclear program. The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Isfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Several small research reactors are also located at the site.

Modelling indicates that off-site radiological consequences from an incident at these sites would not be significant. This is consistent with IAEA statements that radiation levels have not increased off-site as a result of the military strikes. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the missile strikes.

Centrifuge production facilities in Karaj and various buildings at Isfahan have been damaged in strikes. These facilities contained either no nuclear material or small amounts of low enriched or natural uranium, and any radioactive contamination would be limited to the sites. The Arak heavy water research reactor, under construction, was damaged in strikes. It is not operational and contained no nuclear material and does not represent a radiological hazard.

Iran has launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. Of these sites, the greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel.

Credible worst-case scenarios for Bushehr and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 22 June 2025 10:00 AEST

KEY MESSAGES

- Missile strikes by Israel have caused damage to Iranian nuclear facilities. IAEA reports no increase in off-site radiation levels around these facilities
- Modelling indicates that off-site radiological consequences from an incident at the targeted sites would not be significant
- IAEA DG Grossi's statement (on 20/06/25) on the Bushehr reactor and ARPANSA's assessment are not in conflict (see page 2 of this report)
- Strikes at Arak reactor construction site and Karaj manufacturing facilities do not pose a radiological hazard
- Radiological risk to the Australian embassies in Tehran and Tel Aviv is very low due to the distance from major nuclear facilities.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

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Comments regarding IAEA Director General Grossi Statements on Bushehr reactor

ARPANSA is aware of recent statements made by IAEA Director General Grossi regarding the consequences of a potential incident at the Bushehr reactor (https://www.iaea.org/newscenter/statements/iaea-director-general-grossis-statement-to-unsc-on-situation-in-iran-20-june-2025 -):

"Let me now refer to the Bushehr Nuclear Power Plant.....In case of an attack on the Bushehr Nuclear Power Plant a direct hit could result in a very high release of radioactivity to the environment."

"Similarly, a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt, which could result in a high release of radioactivity to the environment. In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres. Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented."

Is the statement in conflict to the assessments/briefings that ARPANSA are undertaking?

The short answer is no. The modelling assessments that ARPANSA has been undertaking are showing similar distances for protective actions as within the statement by DG Grossi. s 33(a)(iii) *"In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres."*

s 33(a)(iii) The distance band that he is referring to relates to a range of protective actions and encompasses the urgent and early protective actions. s 33(a)(iii) as shown by the table on the lower right taken from the IAEA Protection Strategy 2020 and IAEA Protective Actions 2013. The table (see lower right) shows that urgent actions would be required to a distance of around 30 km (this is the UPZ planning zone in the table). These actions are evacuation, sheltering and iodine tablets, using the IAEA criteria.

The ARPANSA modelling assessments show similar requirements for urgent protective actions. Some of our modelling is showing that actions such as sheltering may be required at distances of 10's of km from the Bushehr NPP.

The *"several hundred kilometres"* statement is in reference to the need to restrict the consumption of food and water (this is the ICPD distance in the table). This is based on incurring a dose from ingestion over the year. s 33(a)(iii) Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented. This statement is referring to the protective actions out to that extended distance. Our modelling is showing similar distances for actions such as food restrictions.

On the part of the statement referring to the loss of offsite power *"a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt"*. While this is true to an extent, and there would be an enhanced risk of a reactor core meltdown, the reality is that there are several safety features in place that would limit this occurring. These include the use of diesel generators, back-up battery systems, emergency core cooling systems etc. Over the past years we have seen that the off-site power to the Zaporizhzhia Nuclear Power Plant in Ukraine has been lost, resulting in the use of back-up systems to maintain reactor safety. The Bushehr and Zaporizhzhia Nuclear Power Plants are both VVER type nuclear reactors.

KEY POINTS

- IAEA DG Grossi's statement and ARPANSA assessments are not in conflict.
- DG Grossi's statement on protective actions is not referring to urgent actions such as evacuation being required out to several hundred kilometres.
- IAEA's guidance documents advise that urgent actions (e.g. sheltering) out to 10's of kms. ARPANSA assessment is similar to this.
- Food restrictions and monitoring may be required out to 'several hundred kms', the ARPANSA assessment shows similar for the action of food restrictions.
- Should the external power to the reactor be lost, there are many back-up systems that are used to maintain the safety of the reactor. Although it is not an ideal state for a nuclear reactor, the back-up systems mean that a core meltdown would not be an immediate concern.

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TABLE I-1. APPROXIMATE RADII OF EMERGENCY PLANNING ZONES AND DISTANCES AROUND THE REACTOR SITES

Emergency planning zones and distances	Approximate radii (km)	
	Nuclear Power Reactor (LWR, 2000 MW(th))	Research Reactor (100 MW(th))
PAZ	5	3
UPZ	30	15
EPD	100	50
ICPD	300	100

Protective actions that may be required following an incident at the Bushehr Nuclear Power Plant

Should there be a large release of radioactive material from the Bushehr Nuclear Power Plant, radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several kilometres



EVACUATION
Local Directions: Follow local directions provided with regard to protective actions such as evacuation.

ARPANSA assessment indicates that this protective actions may be required out to several kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within several tens of kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

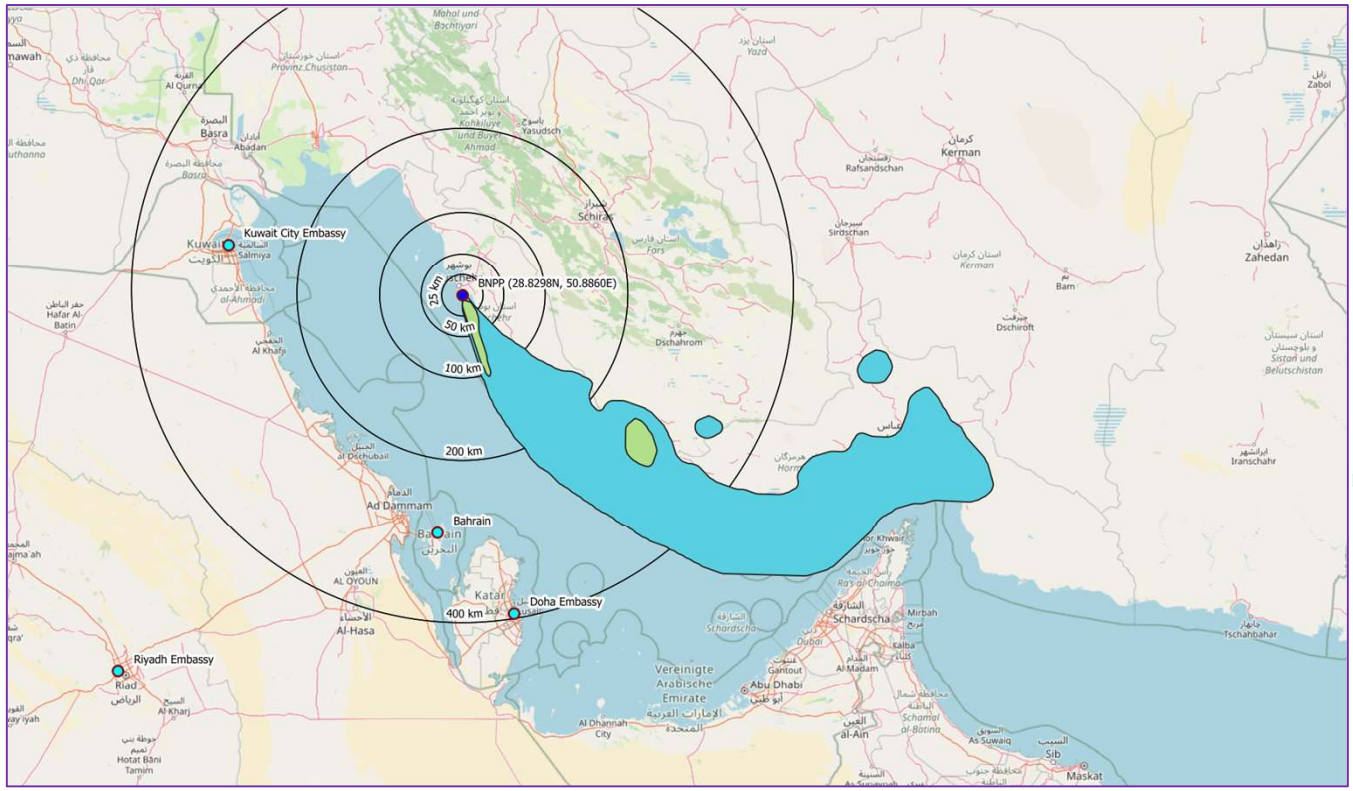
Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

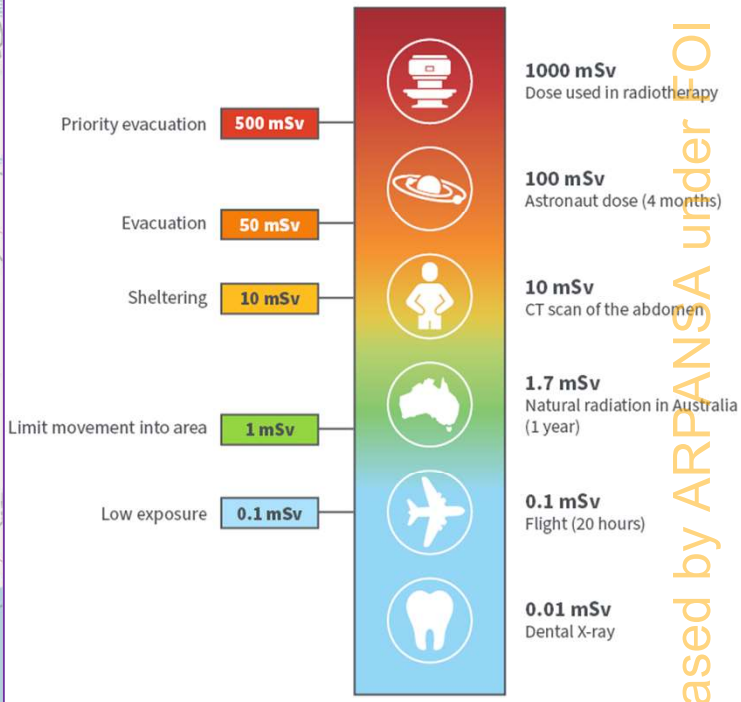
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HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran



LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 1

RELEASE SCENARIO

Postulated scenario of a Station Black out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 3000 MWt.

COMMENTS

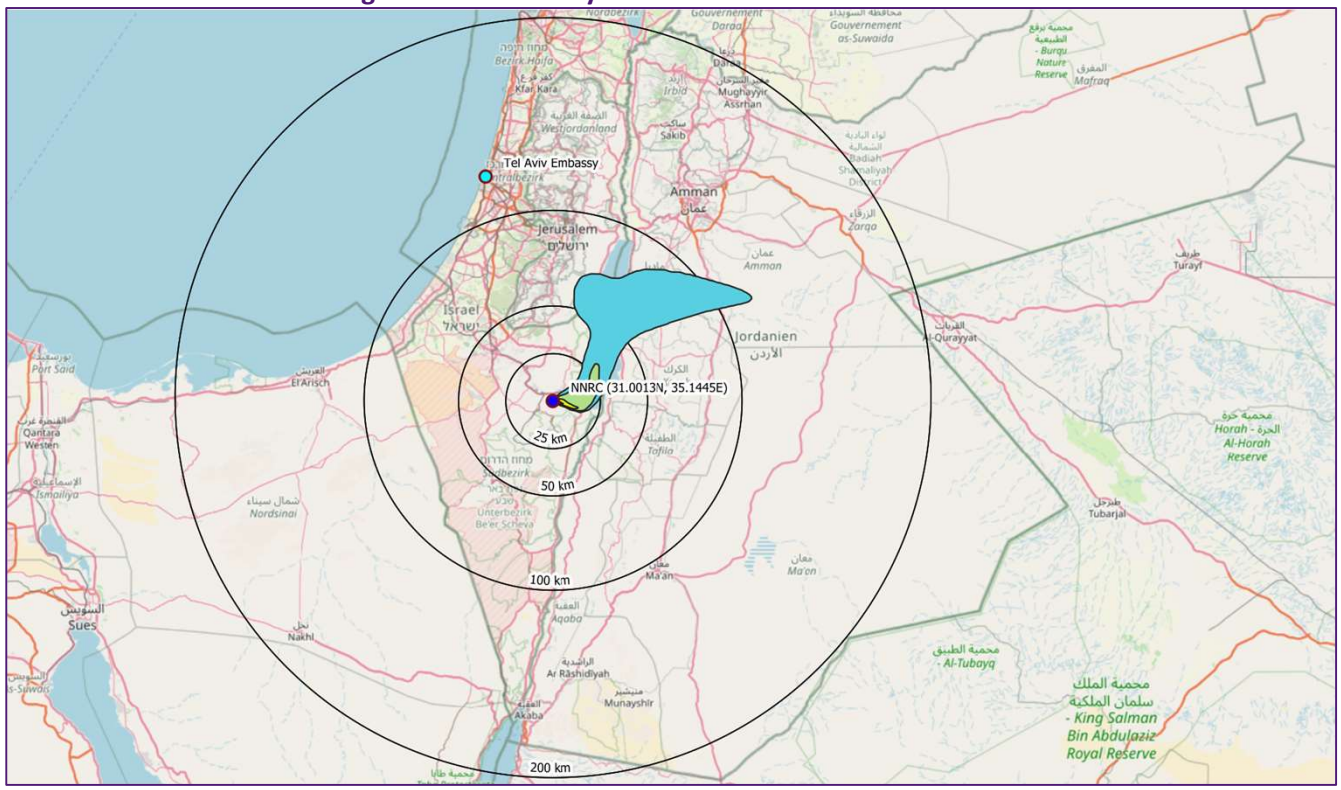
Atmospheric modelling at this time shows plume direction to the south and south-east of the site. The simulation shows that protective actions such as sheltering in place or the issue of stable iodine tablets may be required up to 50 km from the site. Evacuation of some areas may be required up to 10 km from the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.
Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

Note: The Bushehr Nuclear Power Plant generates approximately 1.7% of the annual electricity produced in Iran.

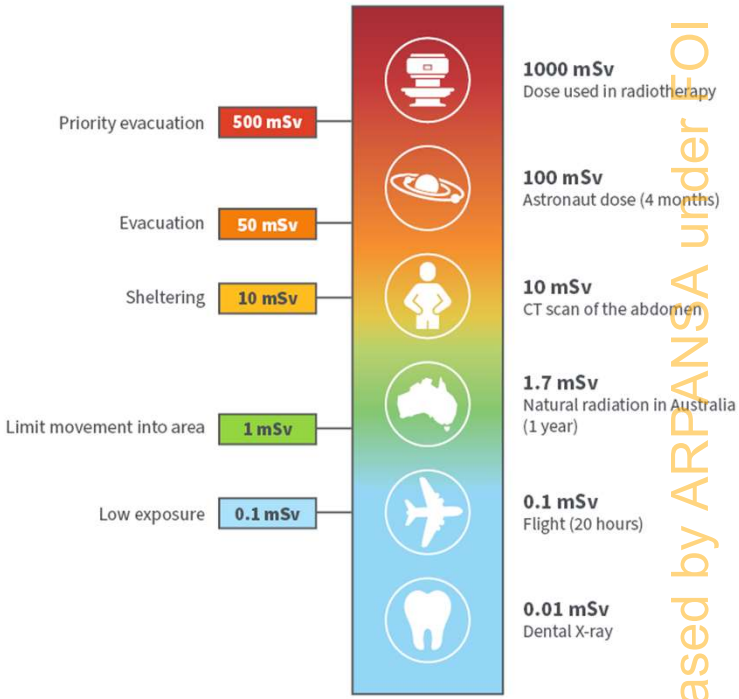
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HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 2

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

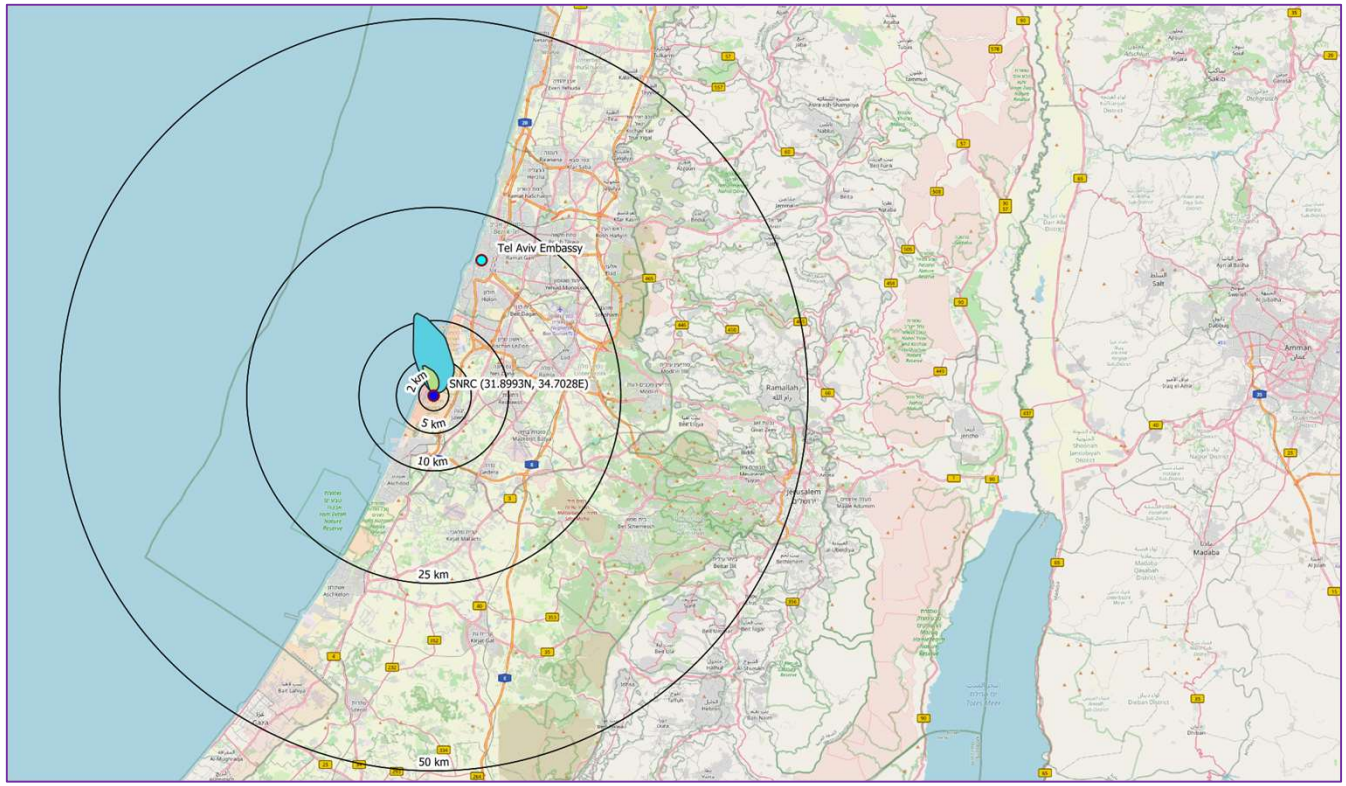
COMMENTS

Atmospheric modelling at this time shows plume direction to the east and north-east of the site. The simulation shows that consequences requiring protective actions such as sheltering in place or the issue of stable iodine tablets from this scenario are likely to be limited to less than 20 km. Evacuation may be required very close to the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel

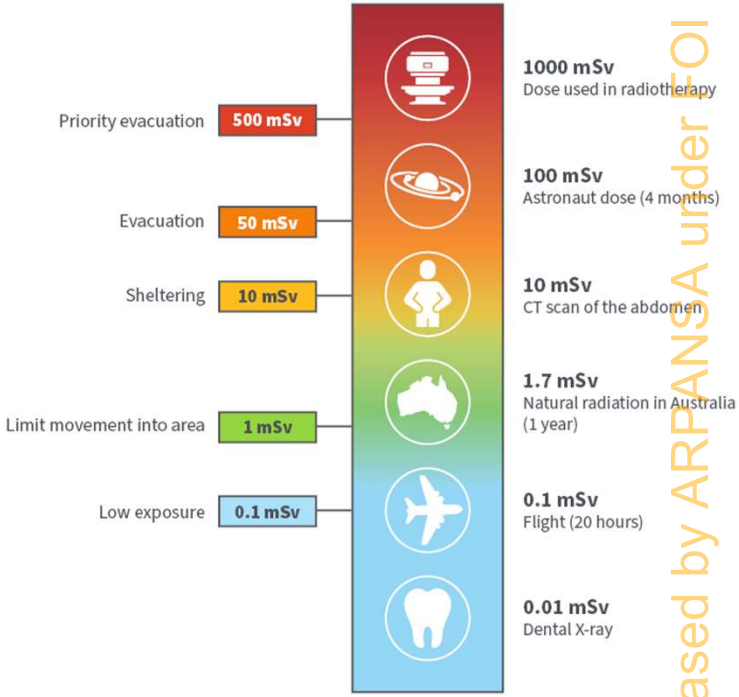


Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 3

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

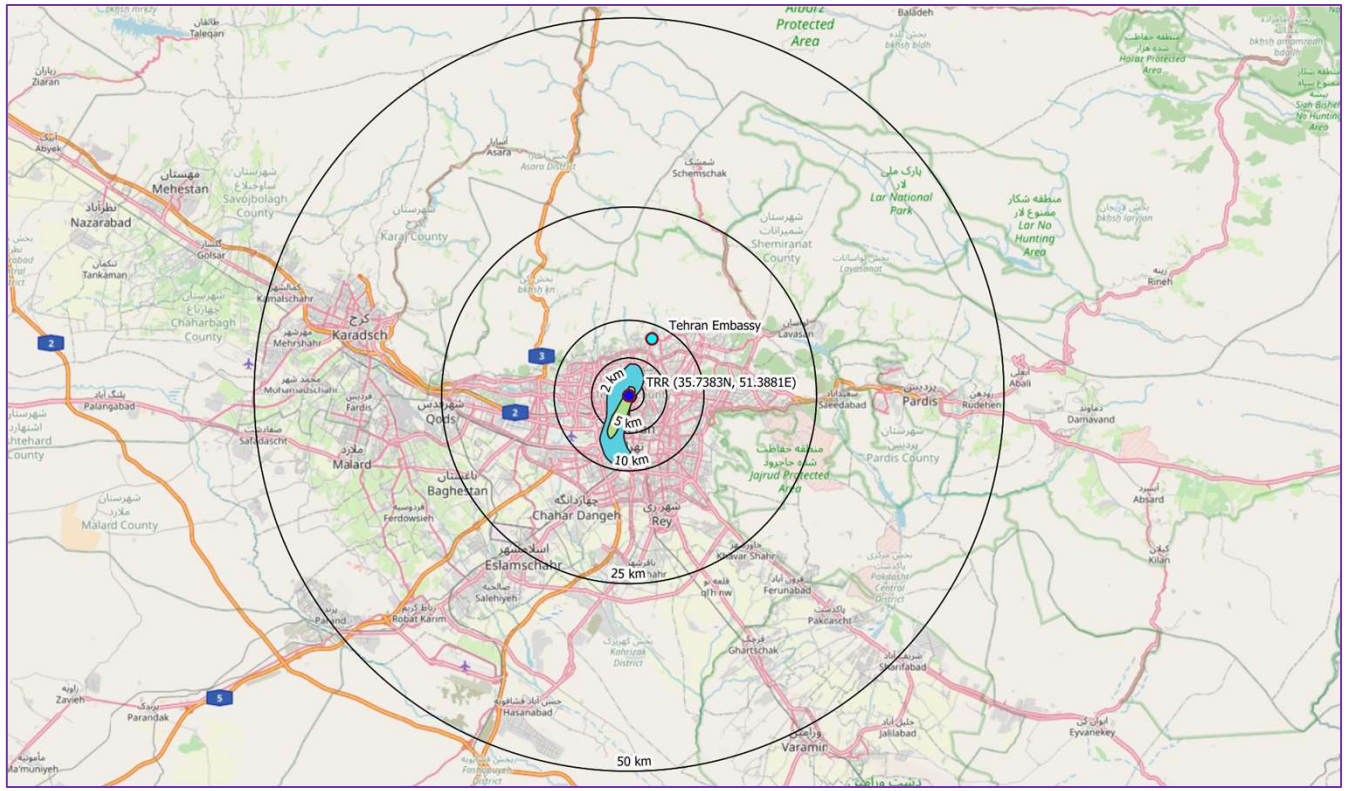
COMMENTS

Atmospheric modelling at this time shows plume direction to the north of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

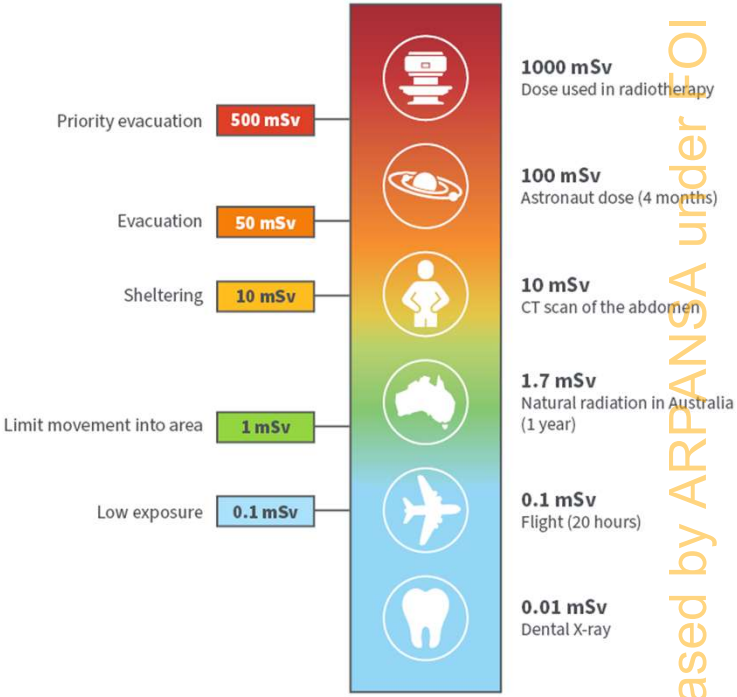
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HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 4

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

COMMENTS

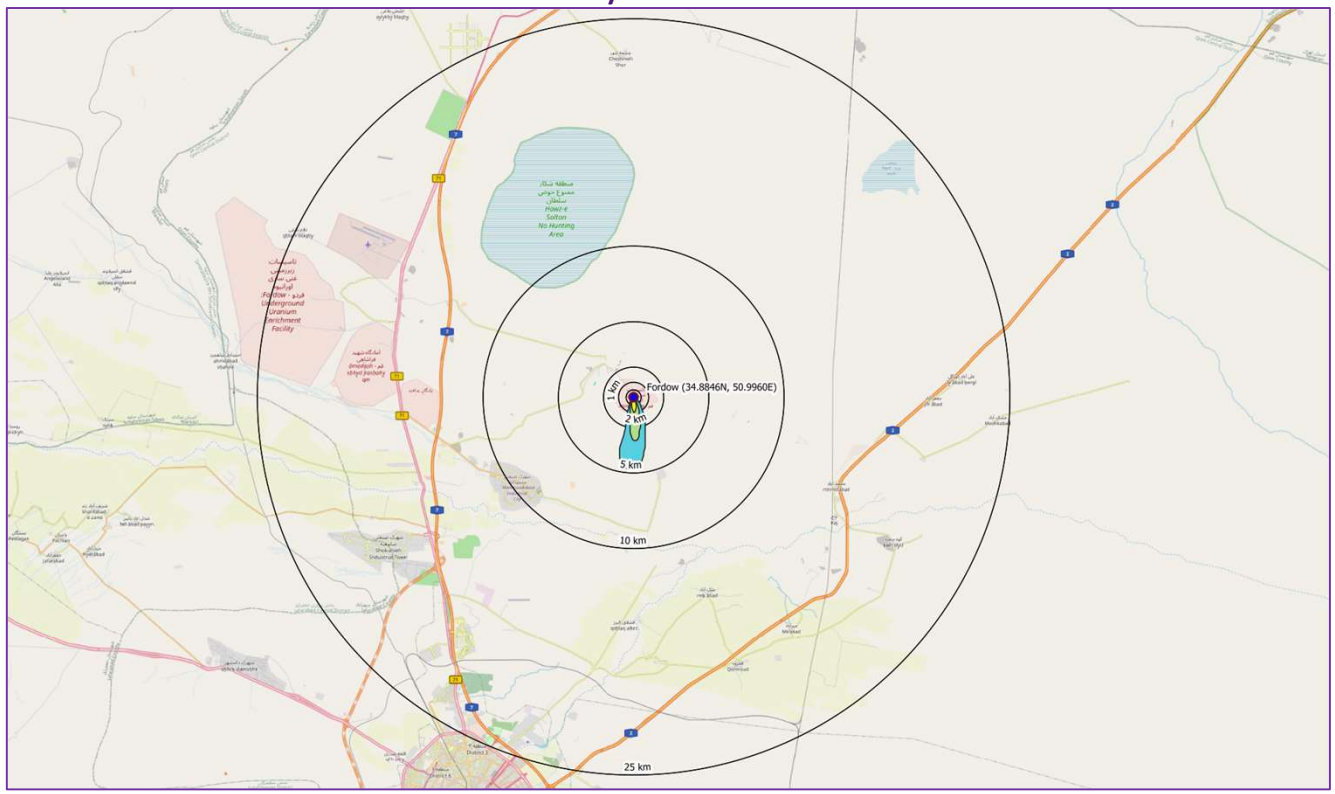
Atmospheric modelling at this time shows plume direction to the south of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

Radiological risk at the Australian embassy in Tehran is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any protective actions would be required at the embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran

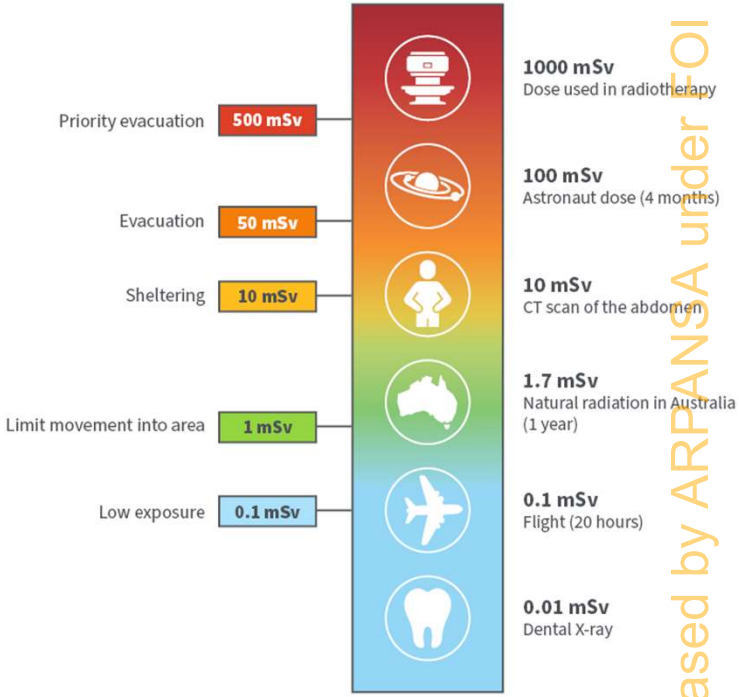


Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 5

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the south of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at the Fordow Nuclear Facility. This is consistent with IAEA statements that significant radiological contamination is limited to the site and can be appropriately managed with appropriate radiation protection methods.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

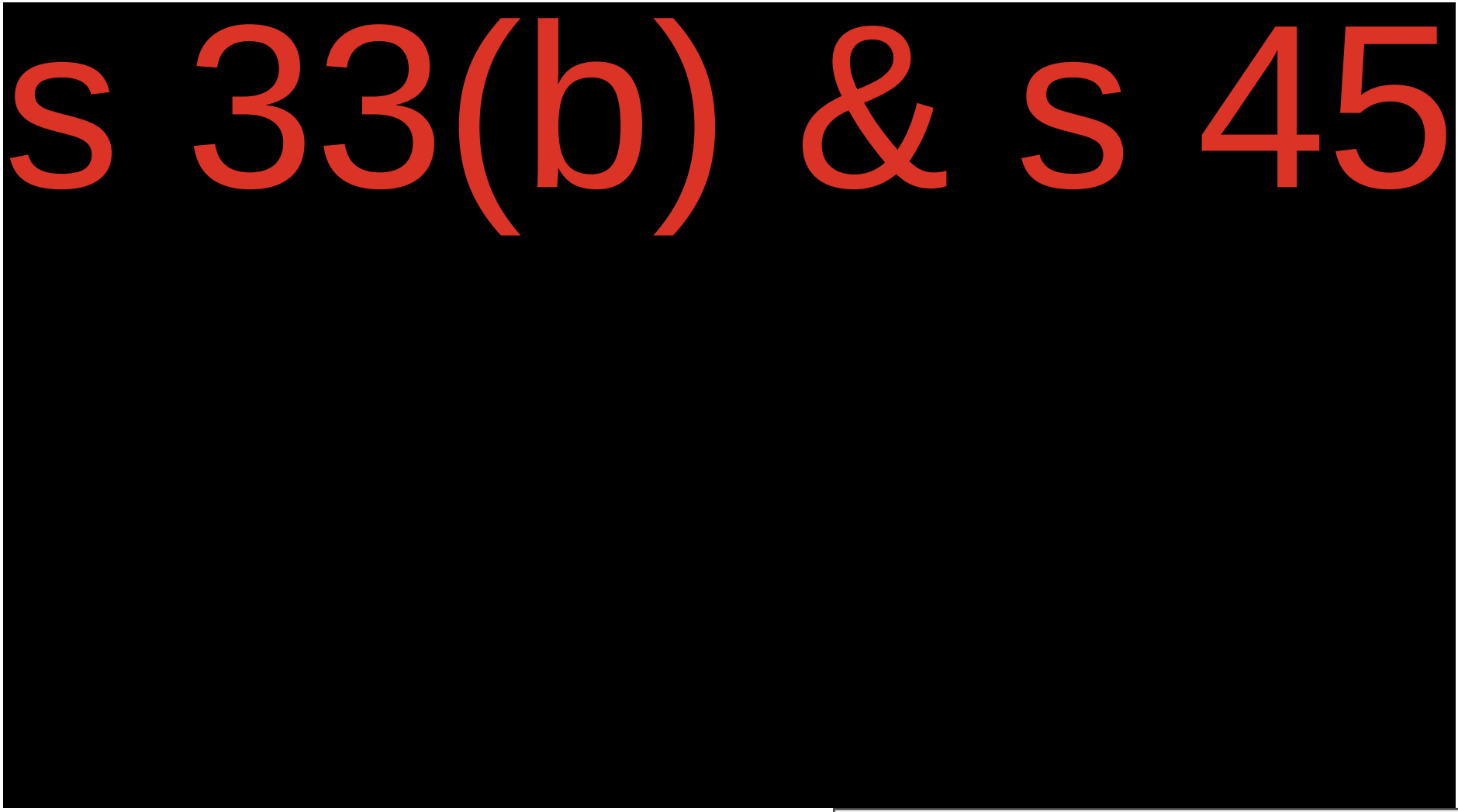
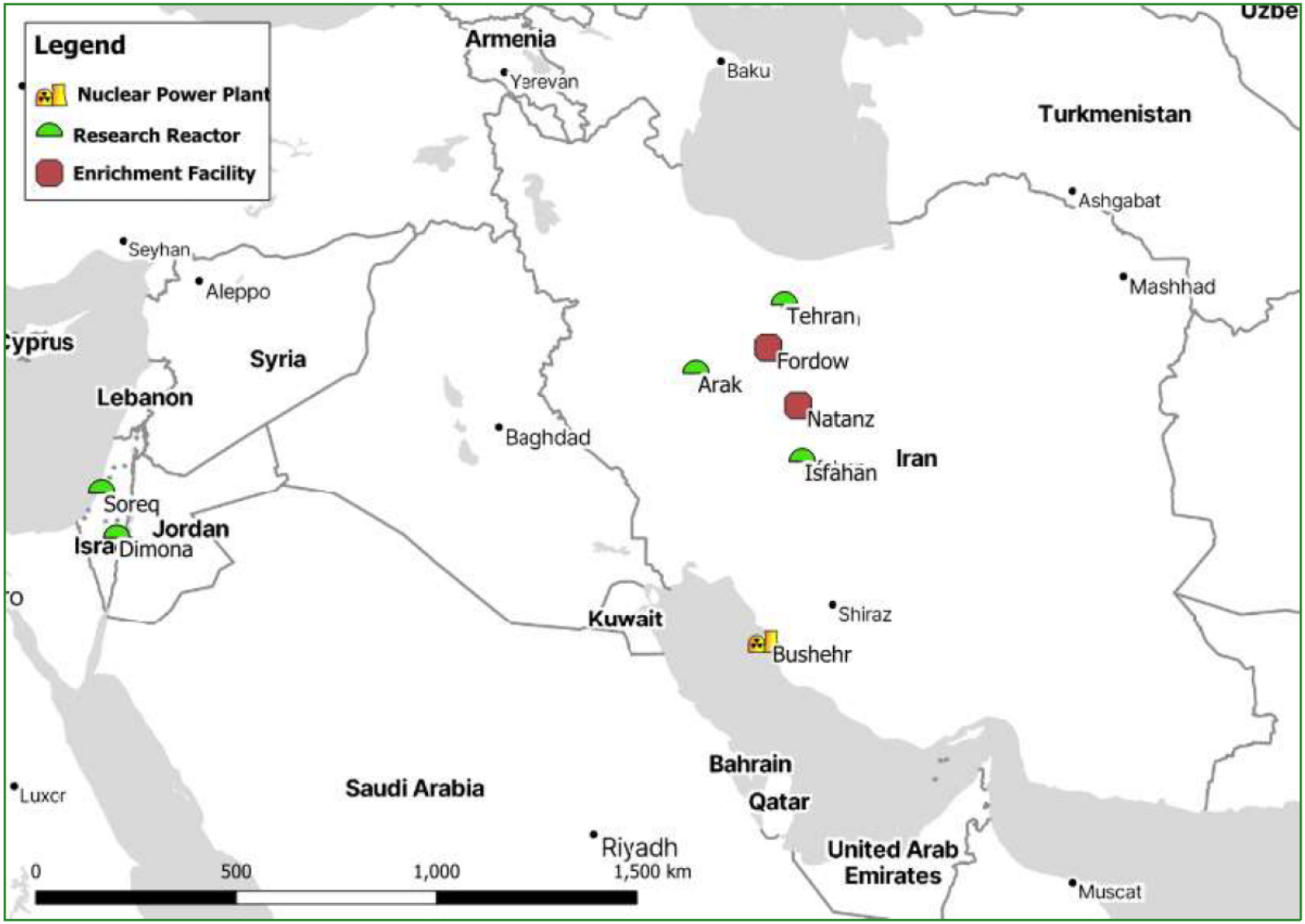


Figure 6 s 33(b) & s 45

International Radiation Monitoring Information System (IRMIS)
A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel



Locations of nuclear facilities in Iran and Israel

Figure 7

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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Document 32

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

Israel has conducted a series of attacks in Iran since 13 June 2025 including strikes on an Iranian nuclear sites at Natanz, Isfahan and Fordow. The United States has also conducted military strikes on these facilities on 22 June 2025. The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Isfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Several small research reactors are also located at the site. These are relatively low power and are unlikely to pose a significant off-site hazard.

Modelling indicates that off-site radiological consequences from an incident at these sites would not be significant. Radiological and chemical contamination is likely present on-site at the Natanz and Fordow facilities. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the strikes.

Centrifuge production facilities in Karaj and various buildings at Isfahan have been damaged in strikes. These facilities contained either no nuclear material or small amounts of low enriched or natural uranium, and any radioactive contamination would be limited to the sites. The Arak heavy water research reactor, under construction, was damaged in strikes. It is not operational and contained no nuclear material and does not represent a radiological hazard.

Iran has launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. Of these sites, the greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel.

Credible worst-case scenarios for Bushehr and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 22 June 2025 10:00 AEST

KEY MESSAGES

- US military strikes have targeted the Natanz, Fordow, and Isfahan nuclear facilities on 22 June 2025. Modelling indicates that off-site radiological consequences from these strikes would not be significant. Radiological and chemical contamination is likely present on-site at these locations.
- IAEA DG Grossi's statement (on 20/06/25) on the Bushehr reactor and ARPANSA's assessment are not in conflict (see page 2 of this report).
- Strikes at Arak reactor construction site and Karaj manufacturing facilities do not pose a radiological hazard.
- Radiological risk to the Australian embassies in Tehran and Tel Aviv is very low due to the distance from major nuclear facilities.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

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Comments regarding IAEA Director General Grossi Statements on Bushehr reactor

ARPANSA is aware of recent statements made by IAEA Director General Grossi regarding the consequences of a potential incident at the Bushehr reactor (https://www.iaea.org/newscenter/statements/iaea-director-general-grossis-statement-to-unsc-on-situation-in-iran-20-june-2025 -):

"Let me now refer to the Bushehr Nuclear Power Plant.....In case of an attack on the Bushehr Nuclear Power Plant a direct hit could result in a very high release of radioactivity to the environment."

"Similarly, a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt, which could result in a high release of radioactivity to the environment. In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres. Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented."

Is the statement in conflict to the assessments/briefings that ARPANSA are undertaking?

The short answer is no. The modelling assessments that ARPANSA has been undertaking are showing similar distances for protective actions as within the statement by DG Grossi. s 33(a)(iii) *"In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres."*

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The *"several hundred kilometres"* statement is in reference to the need to restrict the consumption of food and water (this is the ICPD distance in the table). This is based on incurring a dose from ingestion over the year. s 33(a)(iii) Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented. This statement is referring to the protective actions out to that extended distance. Our modelling is showing similar distances for actions such as food restrictions.

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KEY POINTS

- IAEA DG Grossi's statement and ARPANSA assessments are not in conflict.
- DG Grossi's statement on protective actions is not referring to urgent actions such as evacuation being required out to several hundred kilometres.
- IAEA's guidance documents advise that urgent actions (e.g. sheltering) out to 10's of kms. ARPANSA assessment is similar to this.
- Food restrictions and monitoring may be required out to 'several hundred kms', the ARPANSA assessment shows similar for the action of food restrictions.
- Should the external power to the reactor be lost, there are many back-up systems that are used to maintain the safety of the reactor. Although it is not an ideal state for a nuclear reactor, the back-up systems mean that a core meltdown would not be an immediate concern.

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Protective actions that may be required following an incident at the Bushehr Nuclear Power Plant

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Within several kilometres



EVACUATION
Local Directions: Follow local directions provided with regard to protective actions such as evacuation.

ARPANSA assessment indicates that this protective actions may be required out to several kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within several tens of kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



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FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



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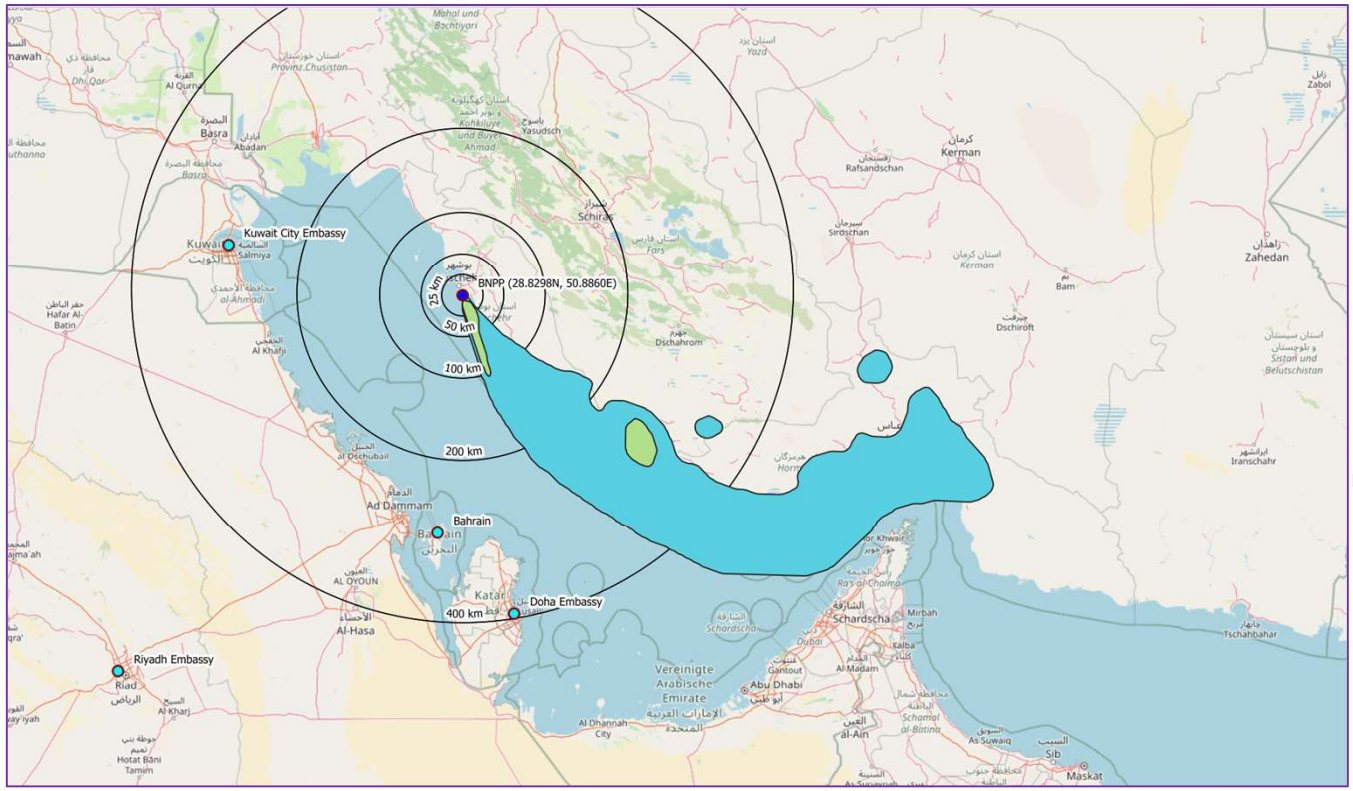
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ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran

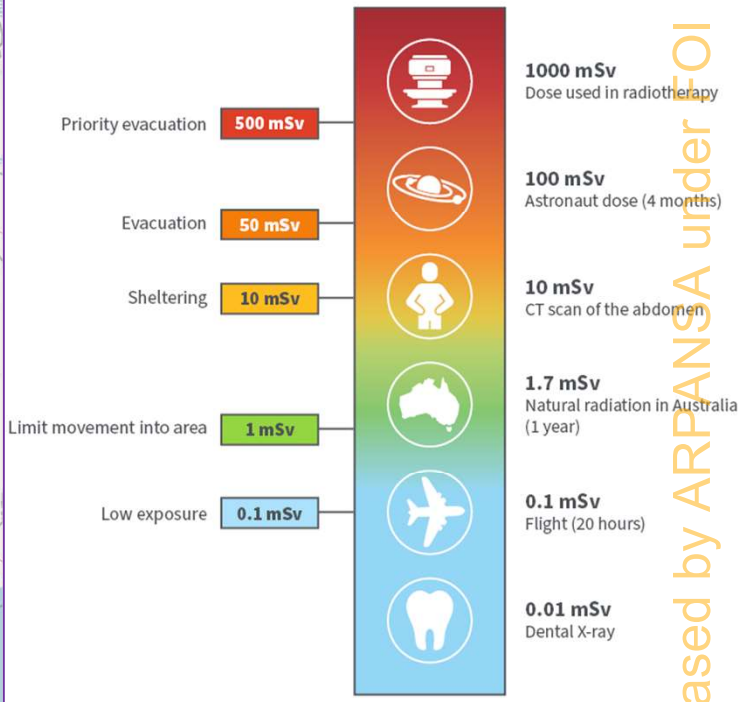


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Figure 1

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



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COMMENTS

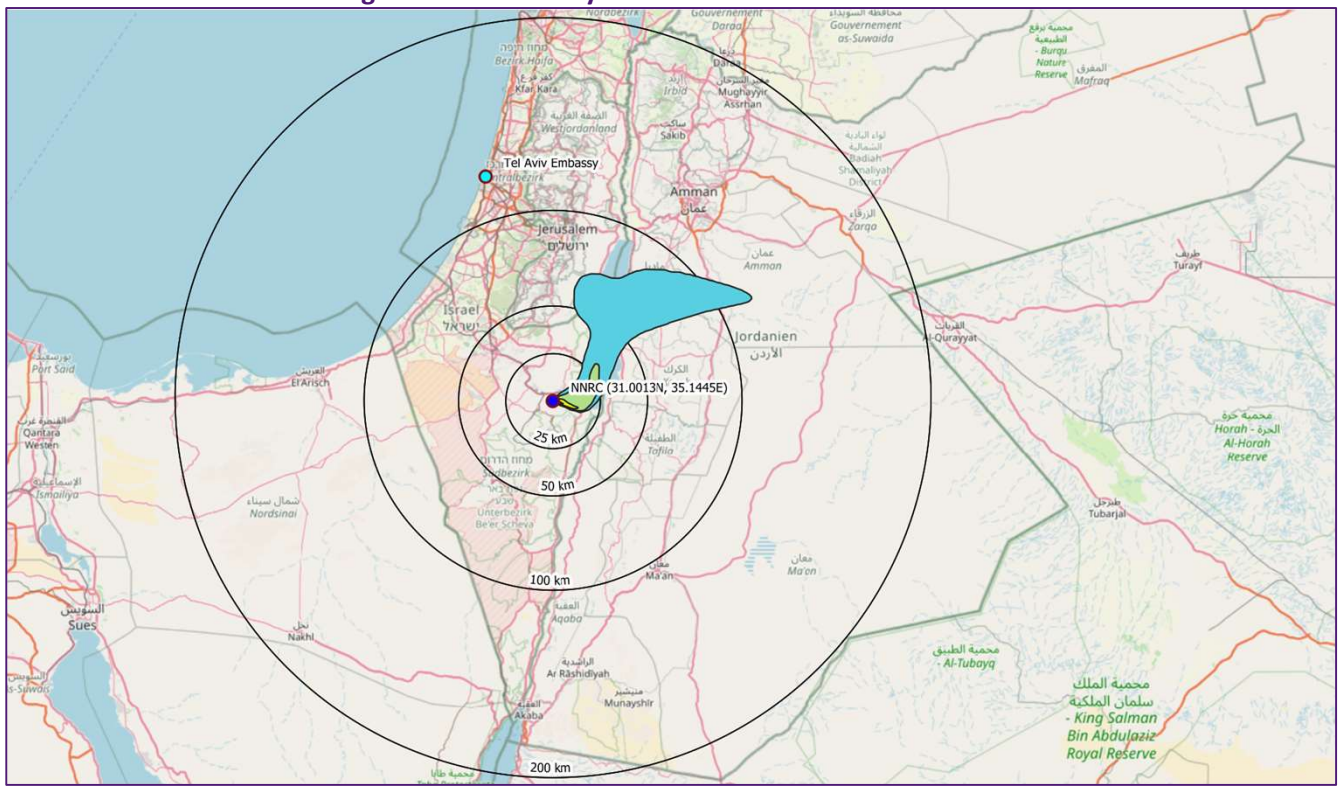
Atmospheric modelling at this time shows plume direction to the south and south-east of the site. The simulation shows that protective actions such as sheltering in place or the issue of stable iodine tablets may be required up to 50 km from the site. Evacuation of some areas may be required up to 10 km from the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.
Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

Note: The Bushehr Nuclear Power Plant generates approximately 1.7% of the annual electricity produced in Iran.

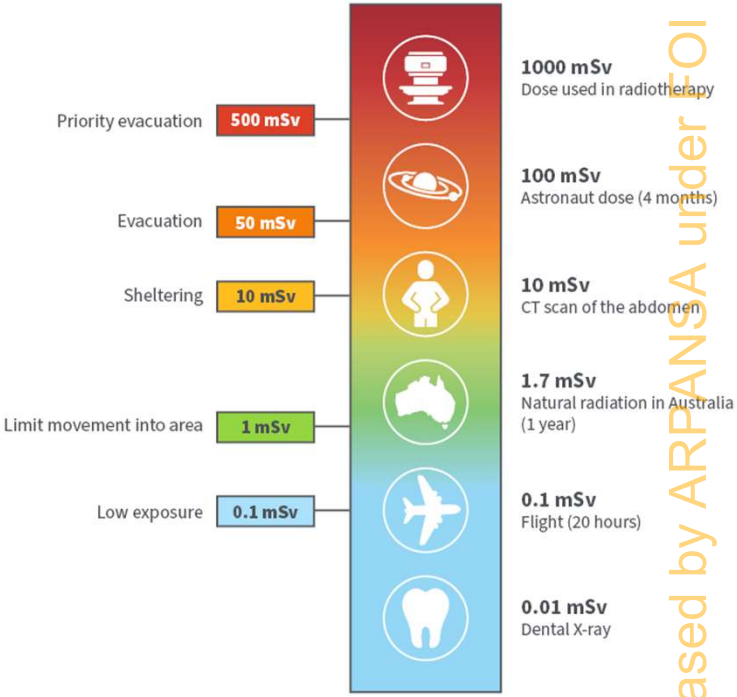
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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 2

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

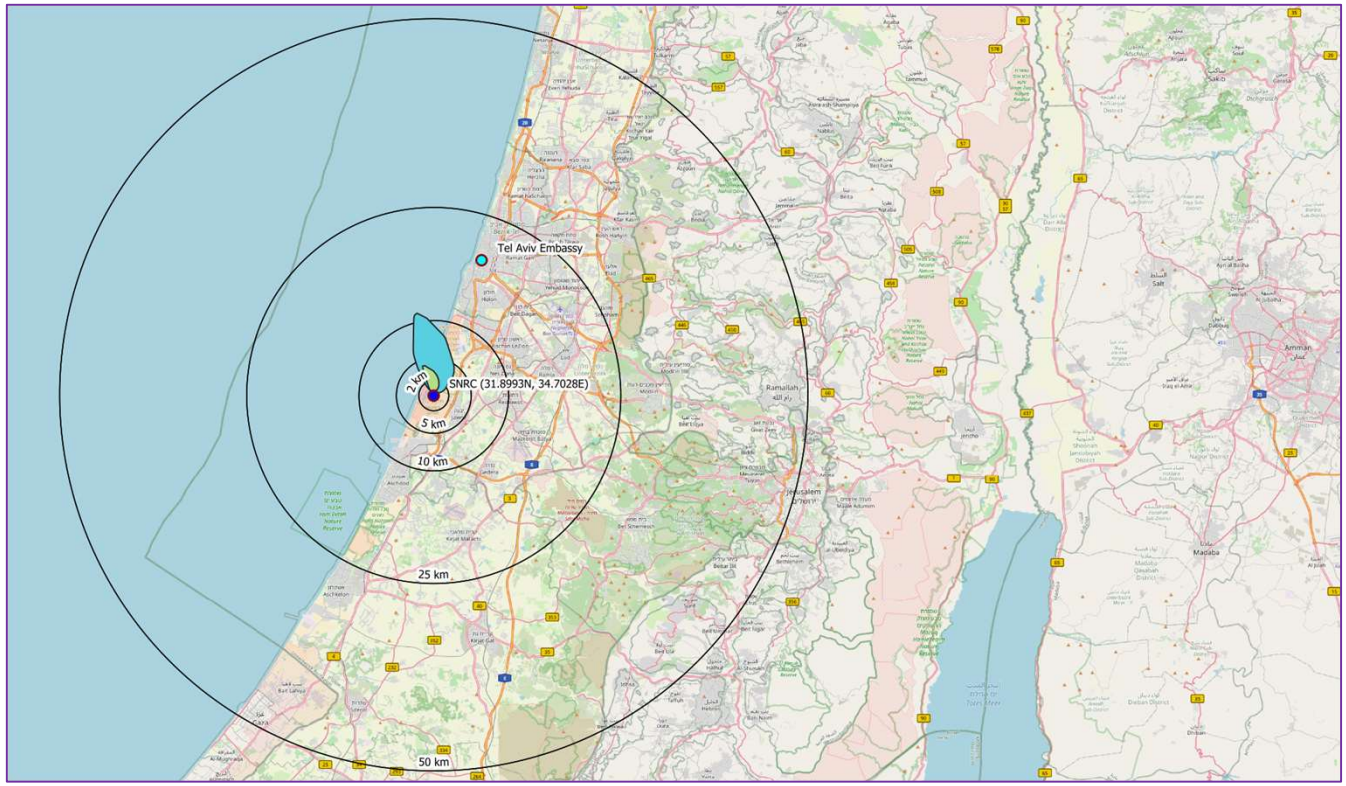
COMMENTS

Atmospheric modelling at this time shows plume direction to the east and north-east of the site. The simulation shows that consequences requiring protective actions such as sheltering in place or the issue of stable iodine tablets from this scenario are likely to be limited to less than 20 km. Evacuation may be required very close to the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel

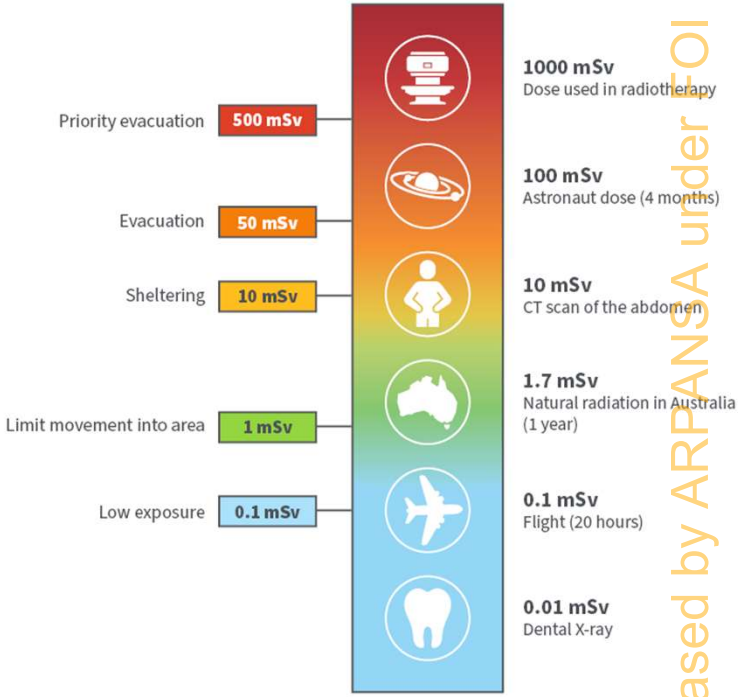


Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 3

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

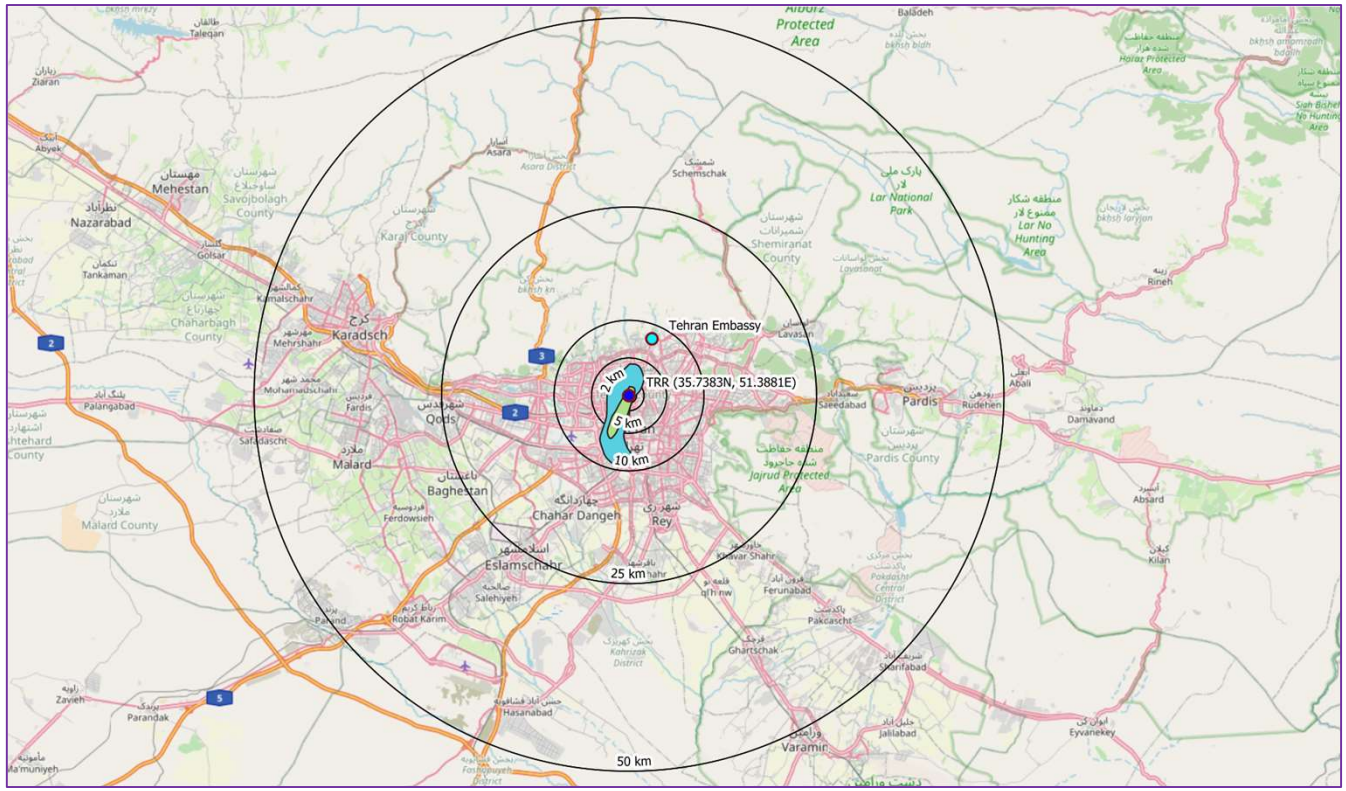
COMMENTS

Atmospheric modelling at this time shows plume direction to the north of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran

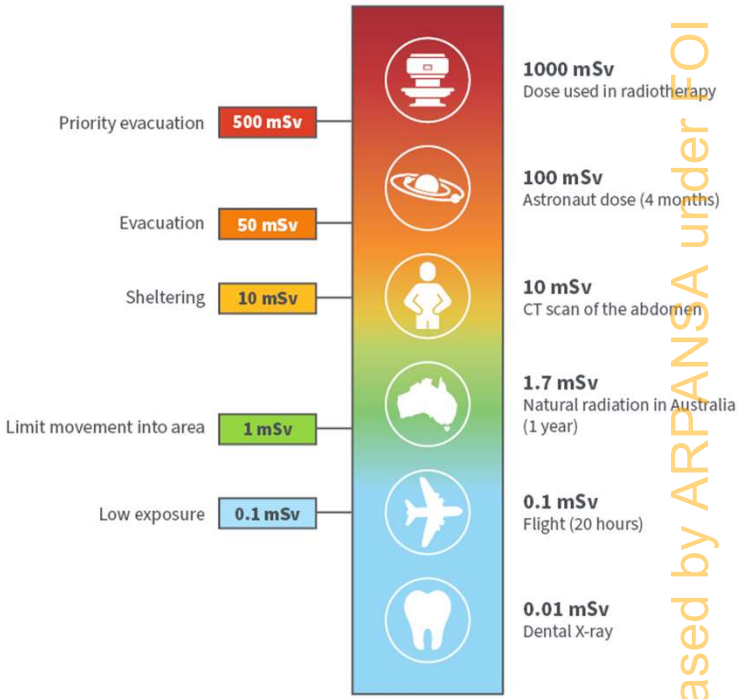


Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 4

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

COMMENTS

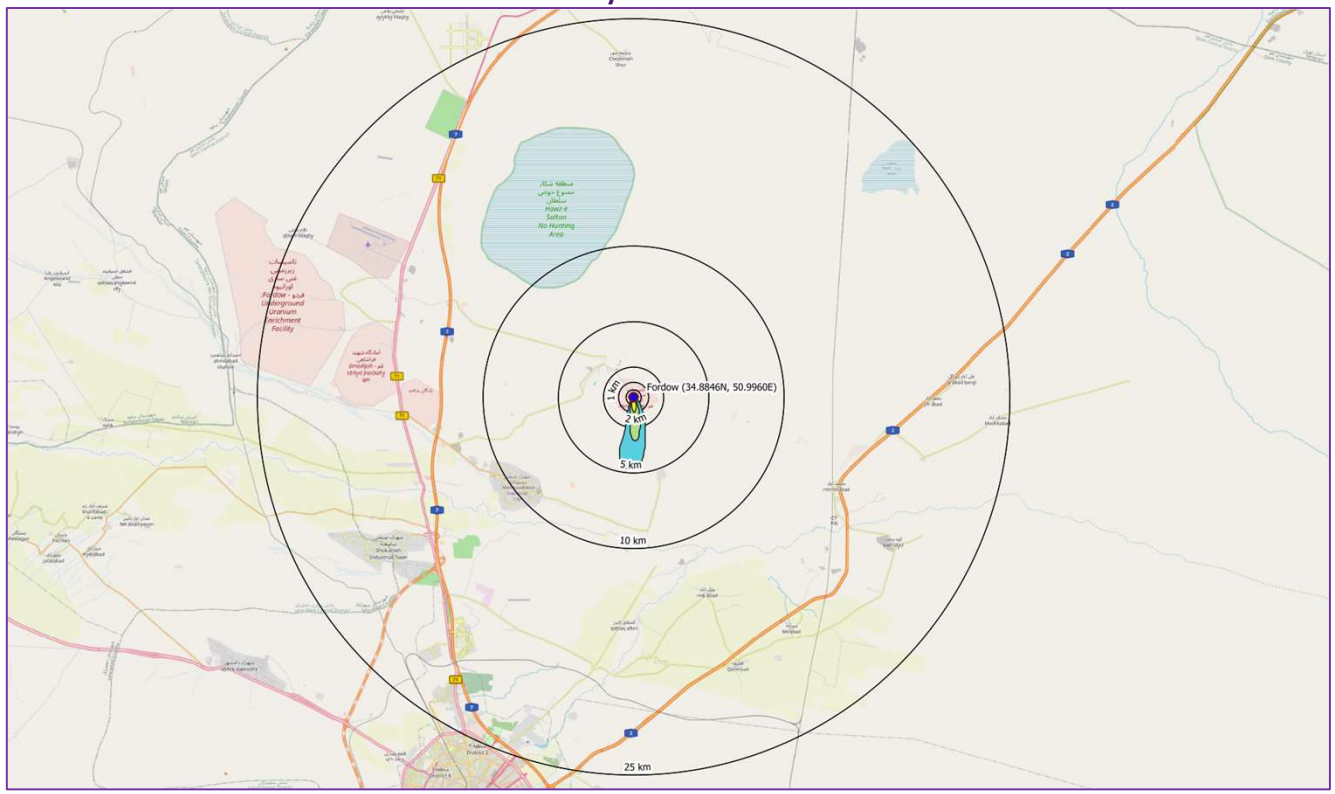
Atmospheric modelling at this time shows plume direction to the south of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

Radiological risk at the Australian embassy in Tehran is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any protective actions would be required at the embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran

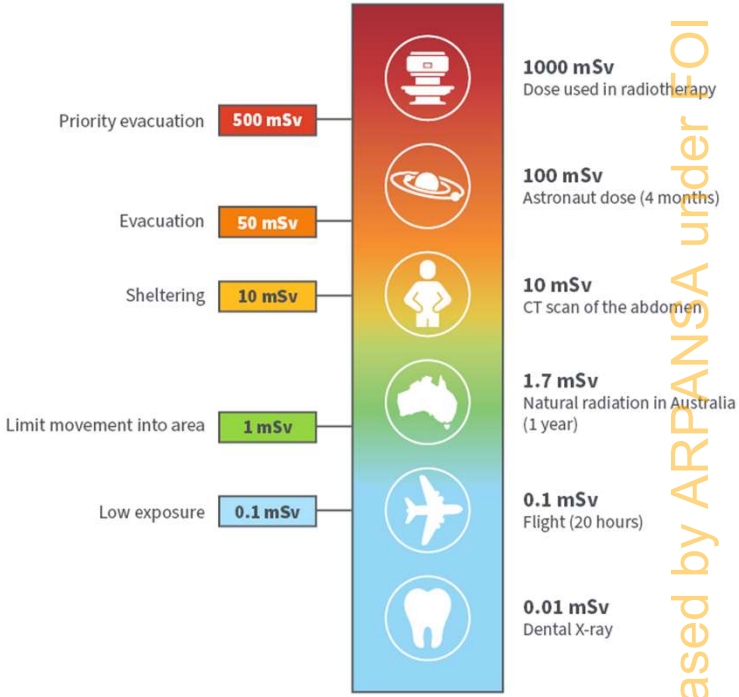


Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 5

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

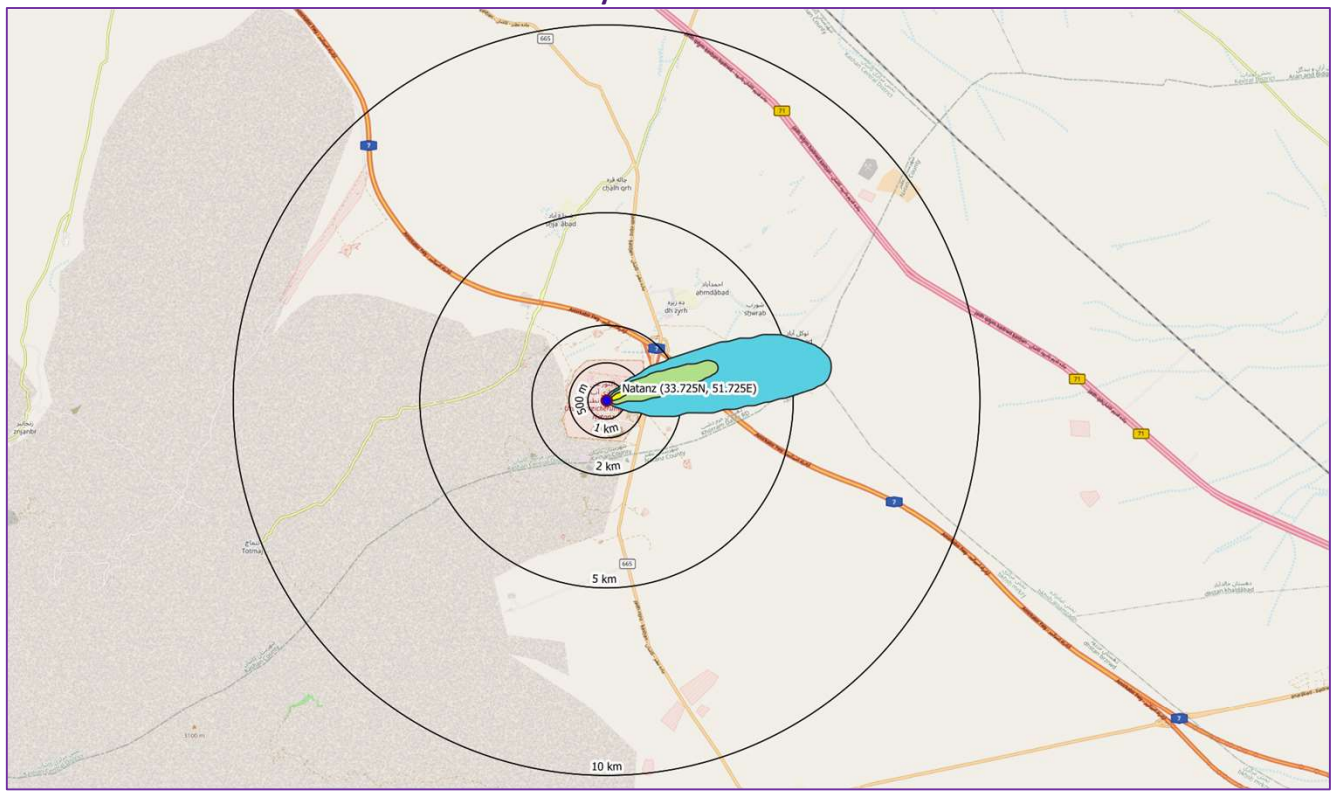
COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the south of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at the Fordow Nuclear Facility. Radiological and chemical contamination is likely present on-site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran

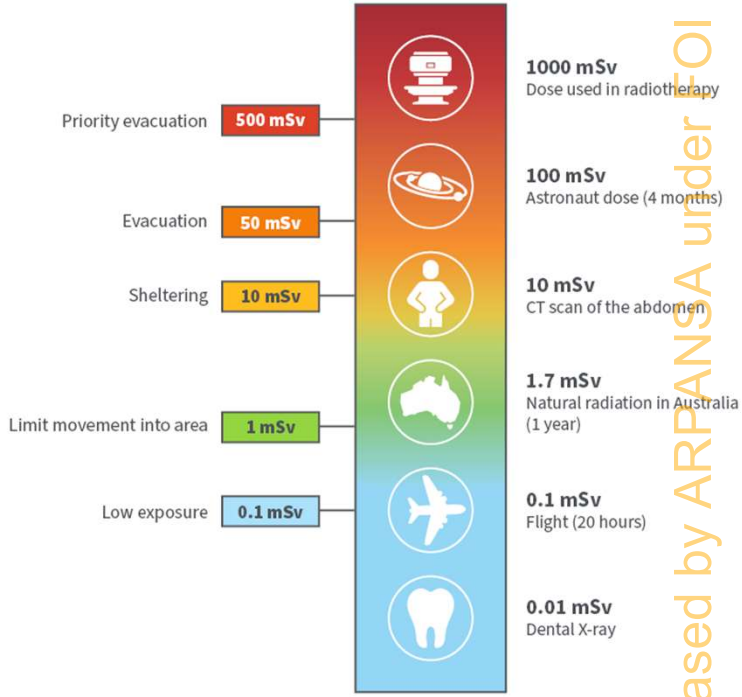


Modelled release at 12:00 AEST 22 June 2025

Model generated at 08:30 AEST on 22 June 2025

Figure 6

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at the Fordow Nuclear Facility. Radiological and chemical contamination is likely present on-site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

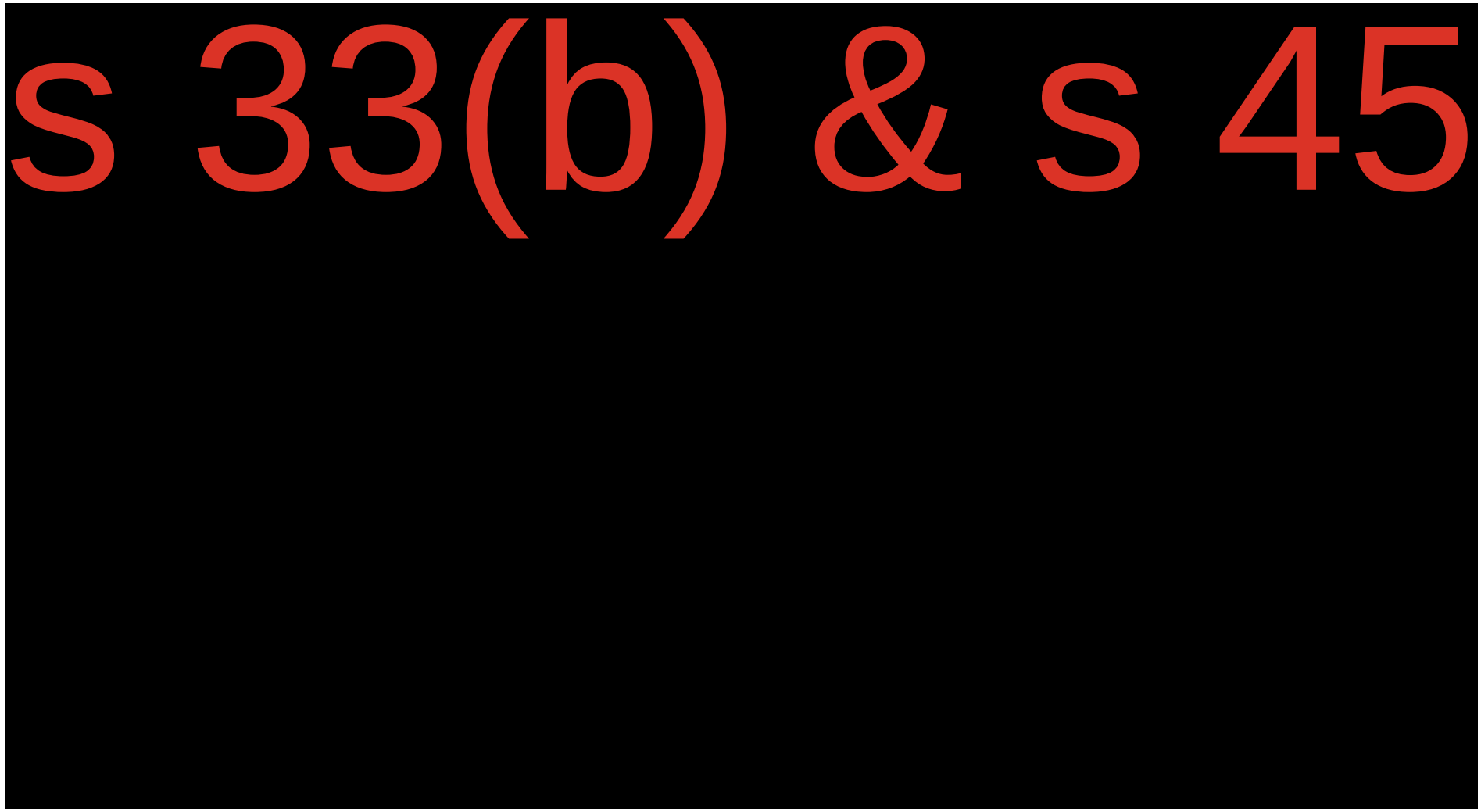
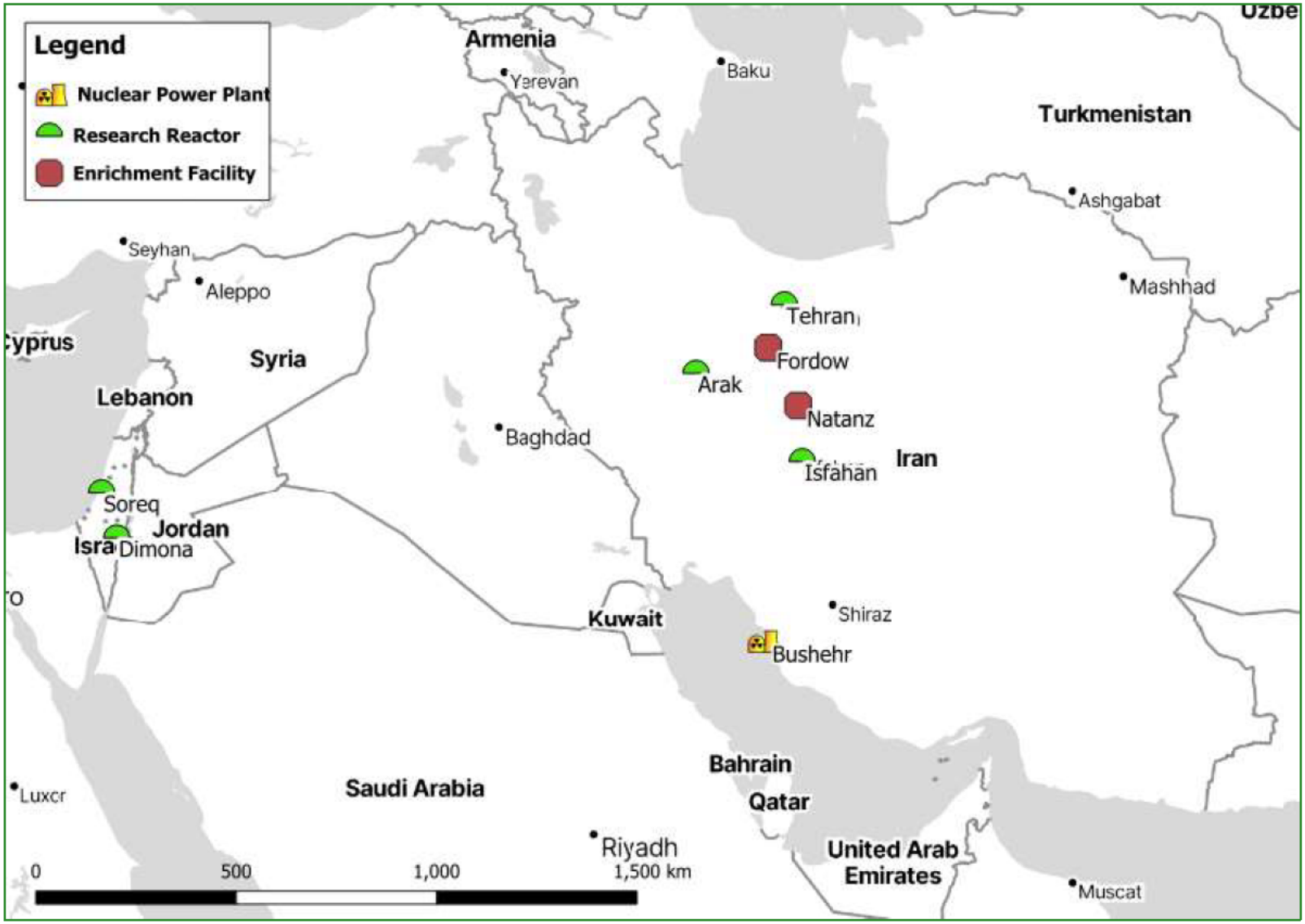


Figure 7 s 33(b) & s 45

International Radiation Monitoring Information System (IRMIS)
A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel



Locations of nuclear facilities in Iran and Israel

Figure 8

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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Document 33

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

Israel has conducted a series of attacks in Iran since 13 June 2025 including strikes on an Iranian nuclear sites at Natanz, Esfahan and Fordow. The United States has also conducted military strikes on these facilities on 22 June 2025. The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Esfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Several small research reactors are also located at the site. These are relatively low power and are unlikely to pose a significant off-site hazard.

Modelling indicates that off-site radiological consequences from an incident at these sites would not be significant. This agrees with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site at these locations. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the strikes.

Strikes on the Arak heavy water reactor (which was under construction) and centrifuge production facilities in Karaj do not pose a radiological risk.

Iran has launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. Of these sites, the greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel.

Credible worst-case scenarios for Bushehr, Natanz, Esfahan, and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 23 June 2025 10:00 AEST

KEY MESSAGES

- US military strikes have targeted the Natanz, Fordow, and Esfahan nuclear facilities on 22 June 2025.
- Modelling indicates that off-site radiological consequences from these strikes would not be significant. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site at these locations.
- IAEA DG Grossi's statement (on 20/06/25) on the Bushehr reactor and ARPANSA's assessment are not in conflict (see page 2 of this report)
- Radiological risk to the Australian embassies in Tehran and Tel Aviv is very low due to the distance from major nuclear facilities.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

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Comments regarding IAEA Director General Grossi Statements on Bushehr reactor

ARPANSA is aware of recent statements made by IAEA Director General Grossi regarding the consequences of a potential incident at the Bushehr reactor (https://www.iaea.org/newscenter/statements/iaea-director-general-grossis-statement-to-unsc-on-situation-in-iran-20-june-2025 -):

"Let me now refer to the Bushehr Nuclear Power Plant.....In case of an attack on the Bushehr Nuclear Power Plant a direct hit could result in a very high release of radioactivity to the environment."

"Similarly, a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt, which could result in a high release of radioactivity to the environment. In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres. Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented."

Is the statement in conflict to the assessments/briefings that ARPANSA are undertaking?

The short answer is no. The modelling assessments that ARPANSA has been undertaking are showing similar distances for protective actions as within the statement by DG Grossi. s 33(a)(iii) *"In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres."*

s 33(a)(iii) The distance band that he is referring to relates to a range of protective actions and encompasses the urgent and early protective actions s 33(a)(iii) as shown by the table on the lower right taken from the IAEA Protection Strategy 2020 and IAEA Protective Actions 2013. The table (see lower right) shows that urgent actions would be required to a distance of around 30 km (this is the UPZ planning zone in the table). These actions are evacuation, sheltering and iodine tablets, using the IAEA criteria.

The ARPANSA modelling assessments show similar requirements for urgent protective actions. Some of our modelling is showing that actions such as sheltering may be required at distances of 10's of km from the Bushehr NPP.

The *"several hundred kilometres"* statement is in reference to the need to restrict the consumption of food and water (this is the ICPD distance in the table). This is based on incurring a dose from ingestion over the year. s 33(a)(iii) Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented. This statement is referring to the protective actions out to that extended distance. Our modelling is showing similar distances for actions such as food restrictions.

On the part of the statement referring to the loss of offsite power *"a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt"*. While this is true to an extent, and there would be an enhanced risk of a reactor core meltdown, the reality is that there are several safety features in place that would limit this occurring. These include the use of diesel generators, back-up battery systems, emergency core cooling systems etc. Over the past years we have seen that the off-site power to the Zaporizhzhia Nuclear Power Plant in Ukraine has been lost, resulting in the use of back-up systems to maintain reactor safety. The Bushehr and Zaporizhzhia Nuclear Power Plants are both VVER type nuclear reactors.

KEY POINTS

- IAEA DG Grossi's statement and ARPANSA assessments are not in conflict.
- DG Grossi's statement on protective actions is not referring to urgent actions such as evacuation being required out to several hundred kilometres.
- IAEA's guidance documents advise that urgent actions (e.g. sheltering) out to 10's of kms. ARPANSA assessment is similar to this.
- Food restrictions and monitoring may be required out to 'several hundred kms', the ARPANSA assessment shows similar for the action of food restrictions.
- Should the external power to the reactor be lost, there are many back-up systems that are used to maintain the safety of the reactor. Although it is not an ideal state for a nuclear reactor, the back-up systems mean that a core meltdown would not be an immediate concern.

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TABLE I-1. APPROXIMATE RADII OF EMERGENCY PLANNING ZONES AND DISTANCES AROUND THE REACTOR SITES

Emergency planning zones and distances	Approximate radii (km)	
	Nuclear Power Reactor (LWR, 2000 MW(th))	Research Reactor (100 MW(th))
PAZ	5	3
UPZ	30	15
EPD	100	50
ICPD	300	100

Protective actions that may be required following an incident at the Bushehr Nuclear Power Plant

Should there be a large release of radioactive material from the Bushehr Nuclear Power Plant, radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION

Local Directions: Follow local directions provided with regard to protective actions such as evacuation.

ARPANSA assessment indicates that this protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS

Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION

In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.

As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS

Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

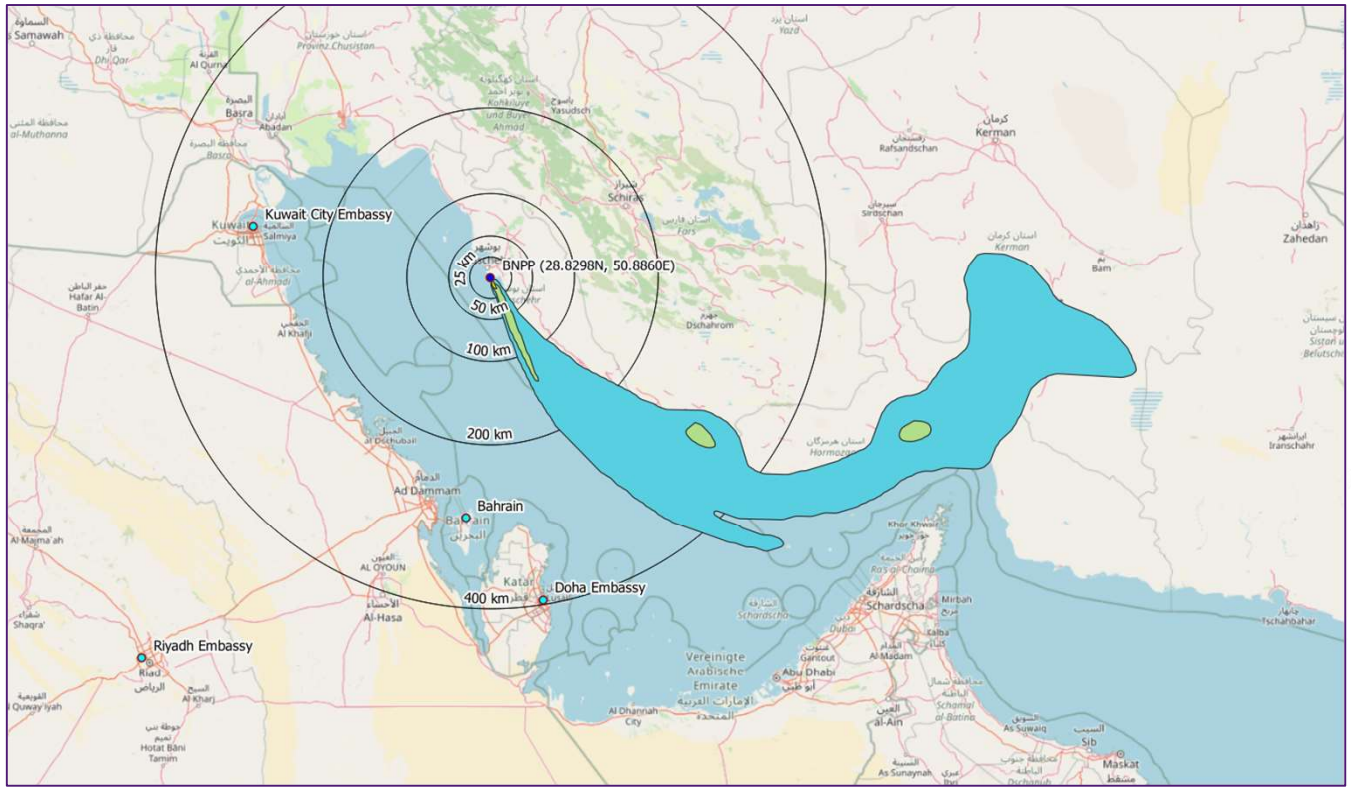
ACTION

As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran

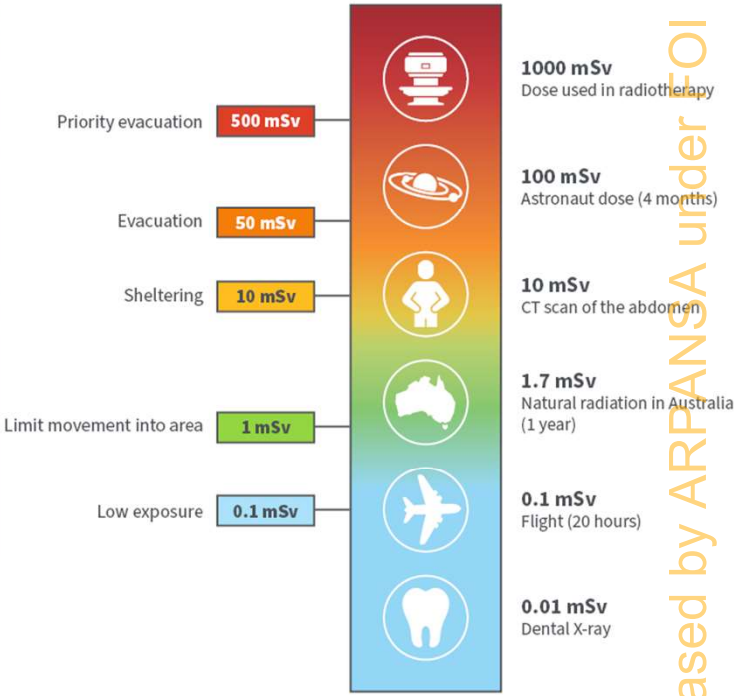


Modelled release at 12:00 AEST 23 June 2025

Model generated at 08:30 AEST on 23 June 2025

Figure 1

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 3000 MWt.

COMMENTS

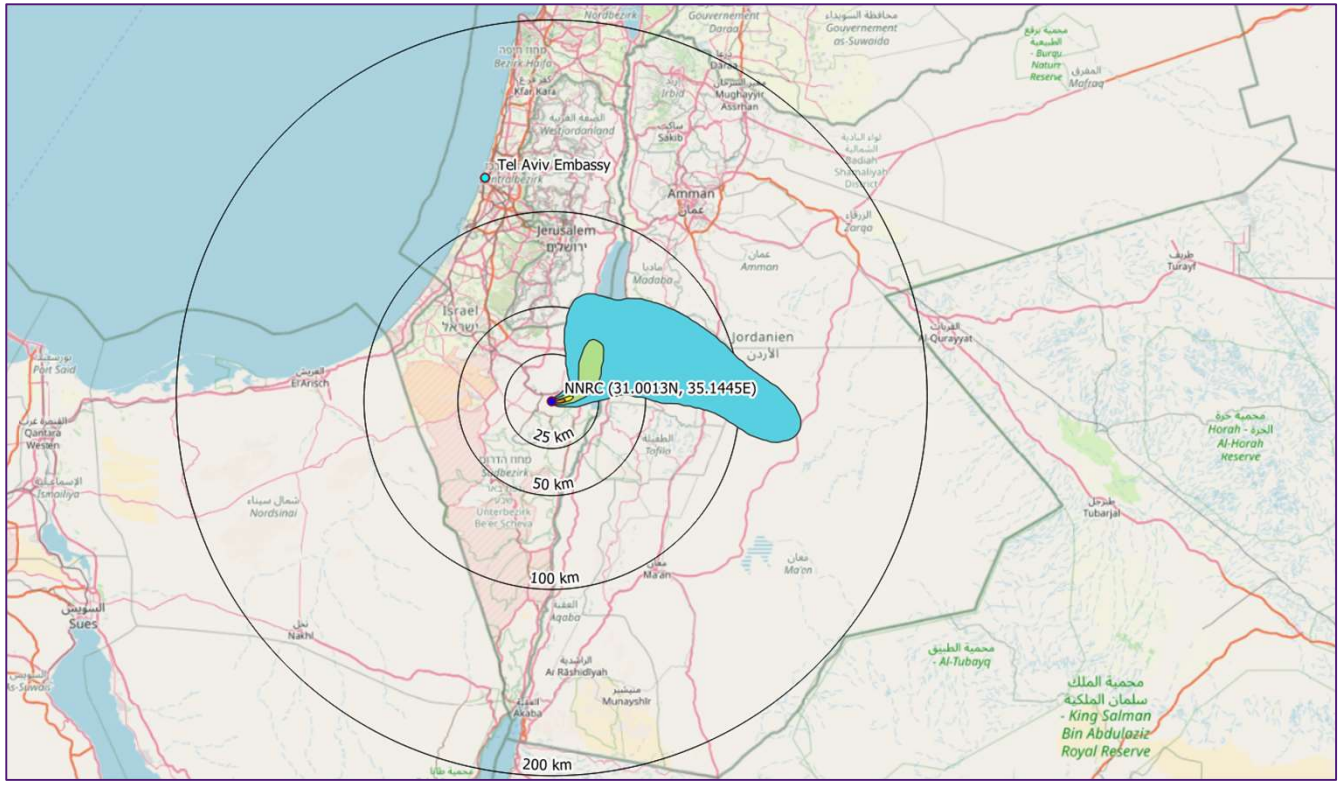
Atmospheric modelling at this time shows plume direction to the south and south-east of the site. The simulation shows that protective actions such as sheltering in place or the issue of stable iodine tablets may be required up to 50 km from the site. Evacuation of some areas may be required up to 10 km from the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.
Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

Note: The Bushehr Nuclear Power Plant generates approximately 1.7% of the annual electricity produced in Iran.

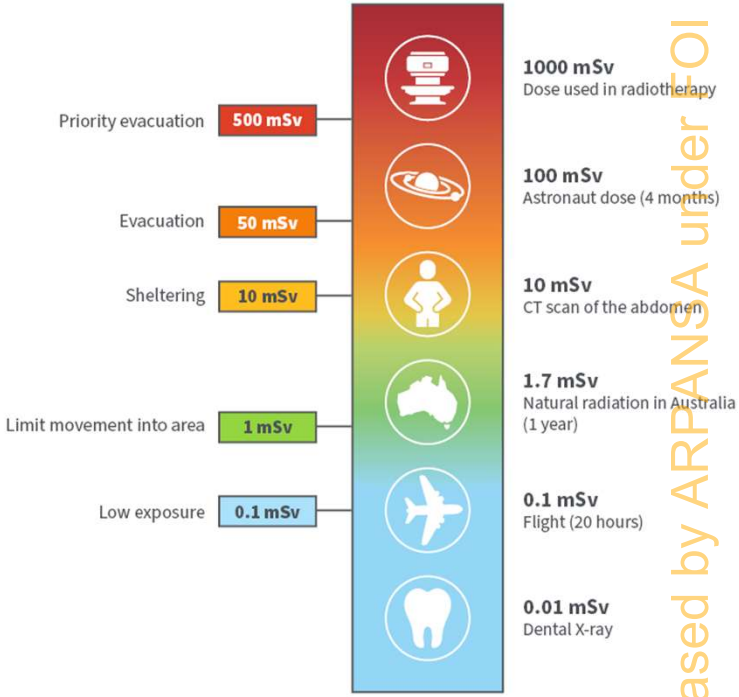
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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



Modelled release at 12:00 AEST 23 June 2025

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Figure 2

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

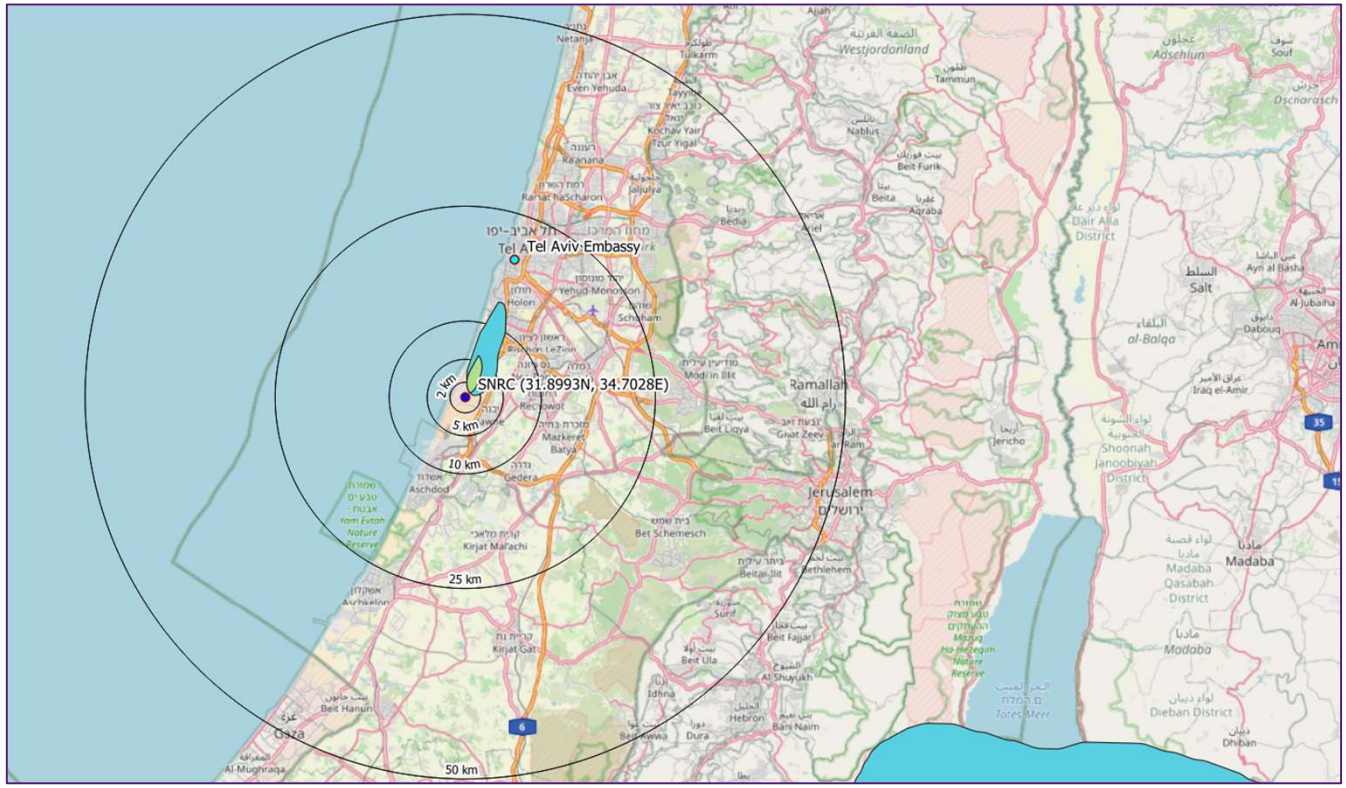
COMMENTS

Atmospheric modelling at this time shows plume direction to the east and north-east of the site. The simulation shows that consequences requiring protective actions such as sheltering in place or the issue of stable iodine tablets from this scenario are likely to be limited to less than 20 km. Evacuation may be required very close to the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

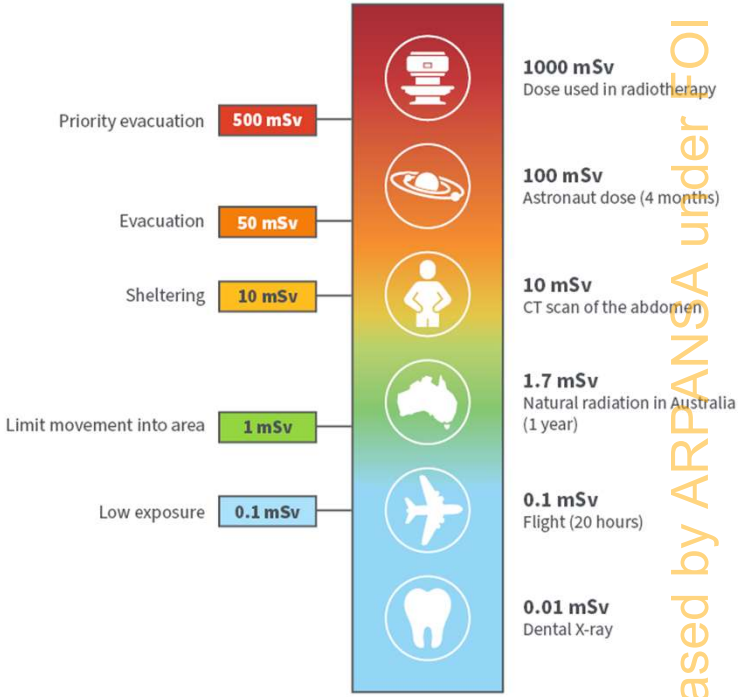
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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



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Figure 3

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

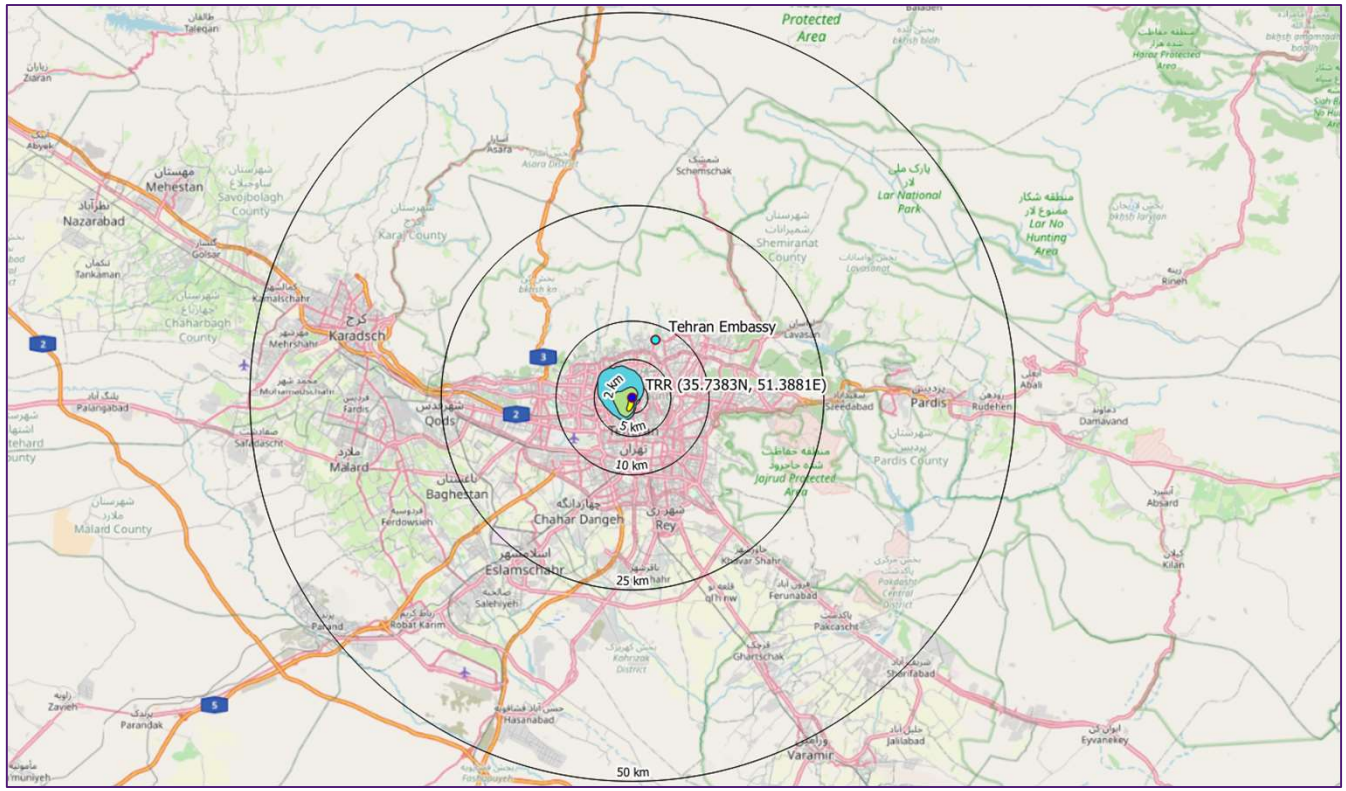
COMMENTS

Atmospheric modelling at this time shows plume direction to the north of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran

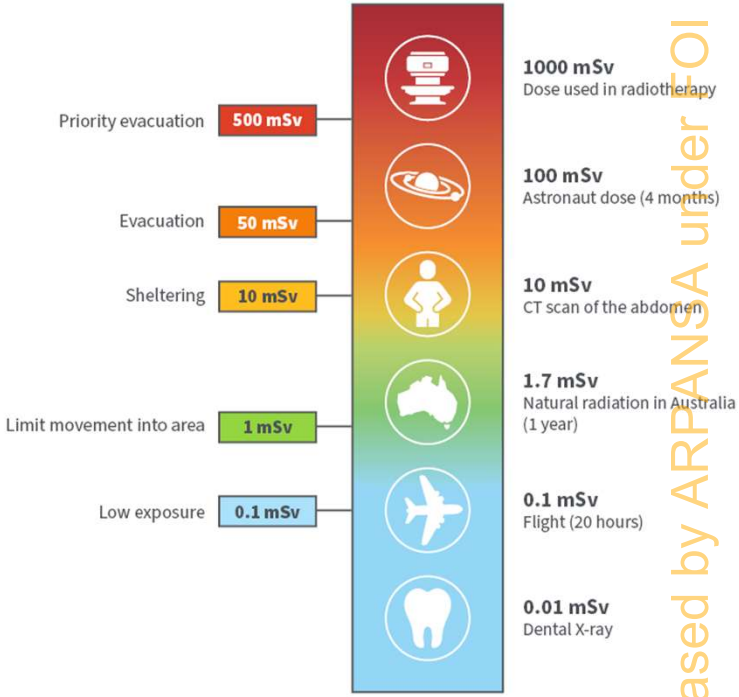


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Figure 4

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

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COMMENTS

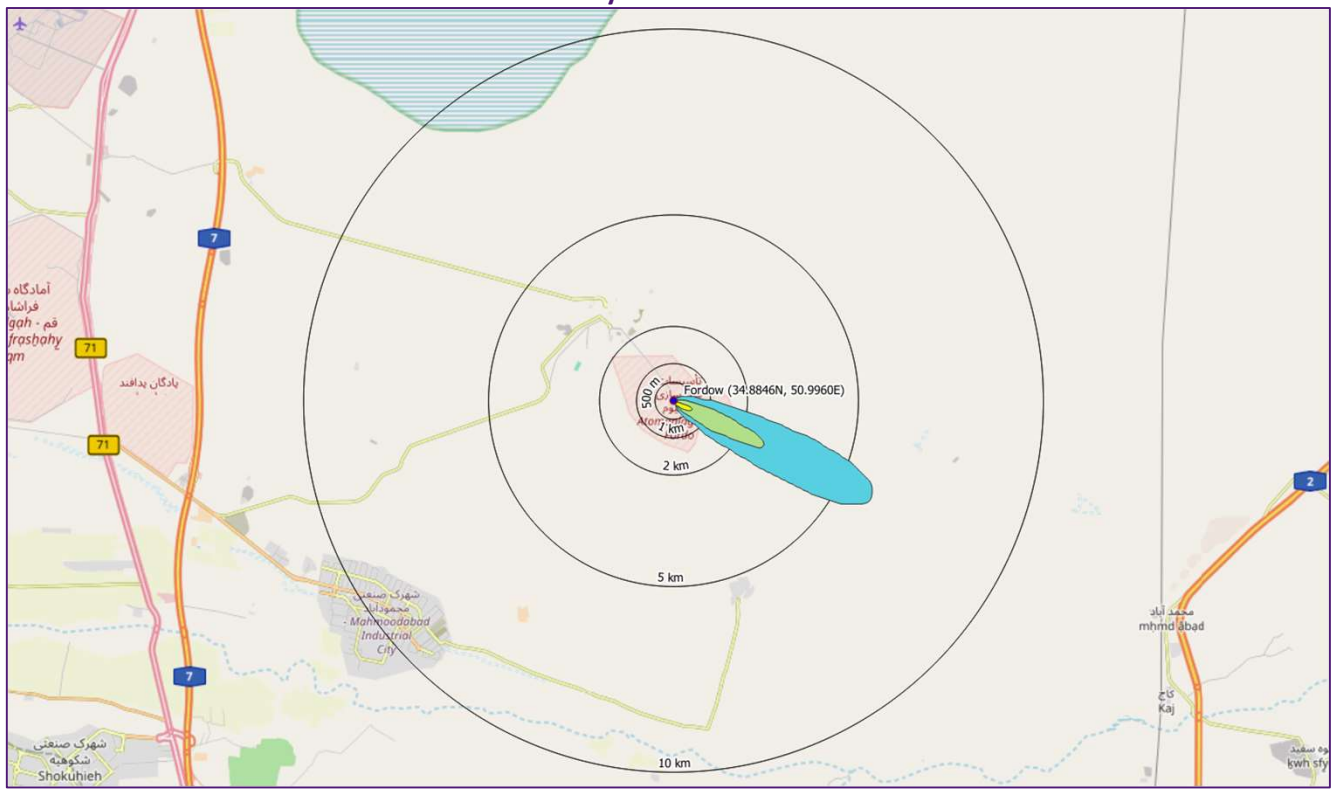
Atmospheric modelling at this time shows plume direction to the south and west of the site. The simulation shows that potential radiological exposure is low and urgent protective actions would be limited to within several kms of the site.

Radiological risk at the Australian embassy in Tehran is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any protective actions would be required at the embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran

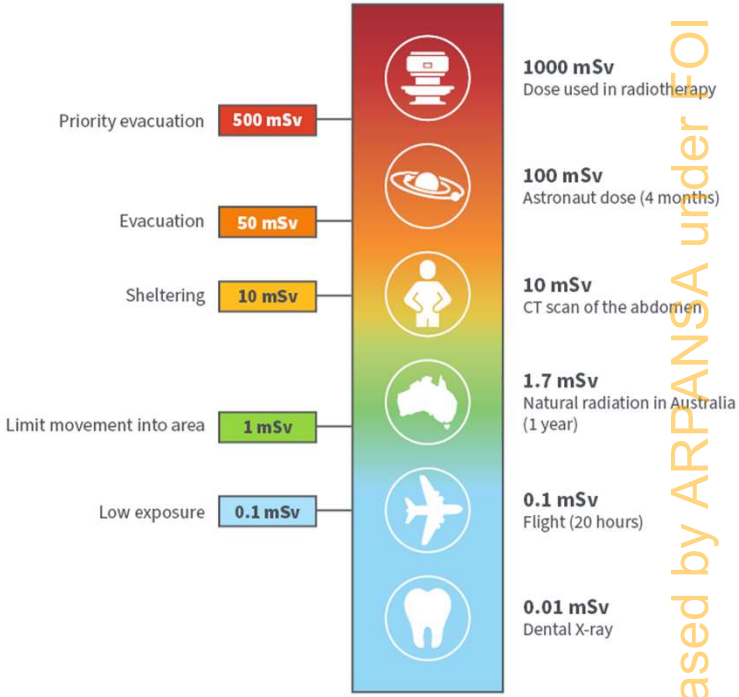


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Figure 5

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Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

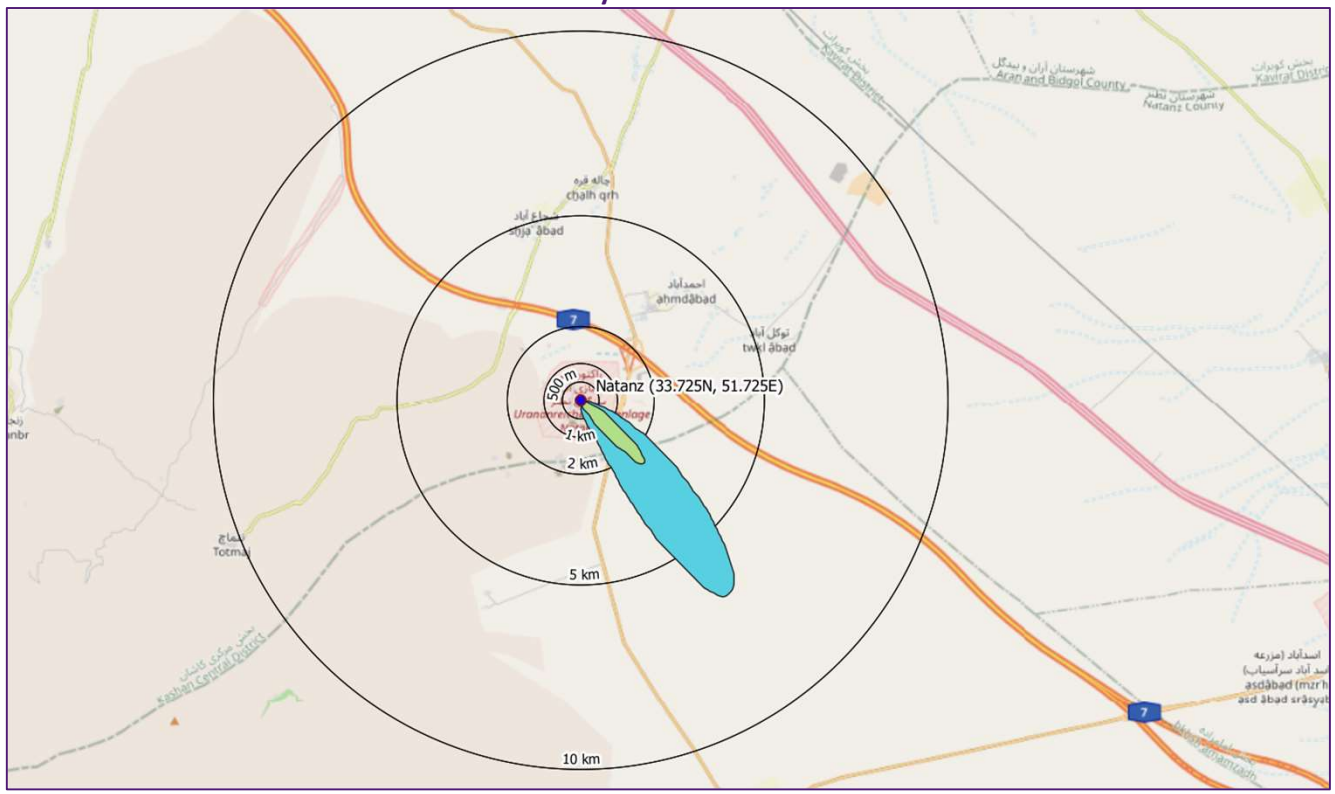
COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the east/south-east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran

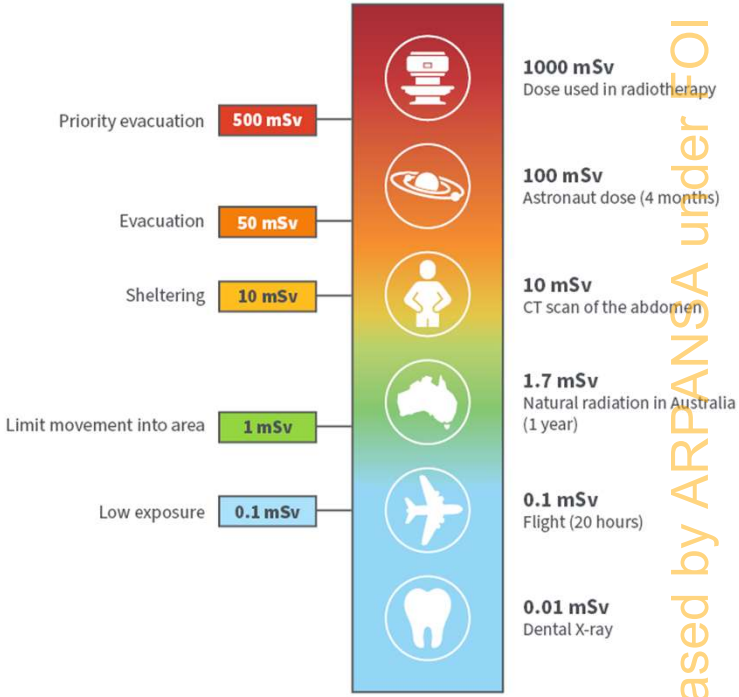


Modelled release at 12:00 AEST 23 June 2025

Model generated at 08:30 AEST on 23 June 2025

Figure 6

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

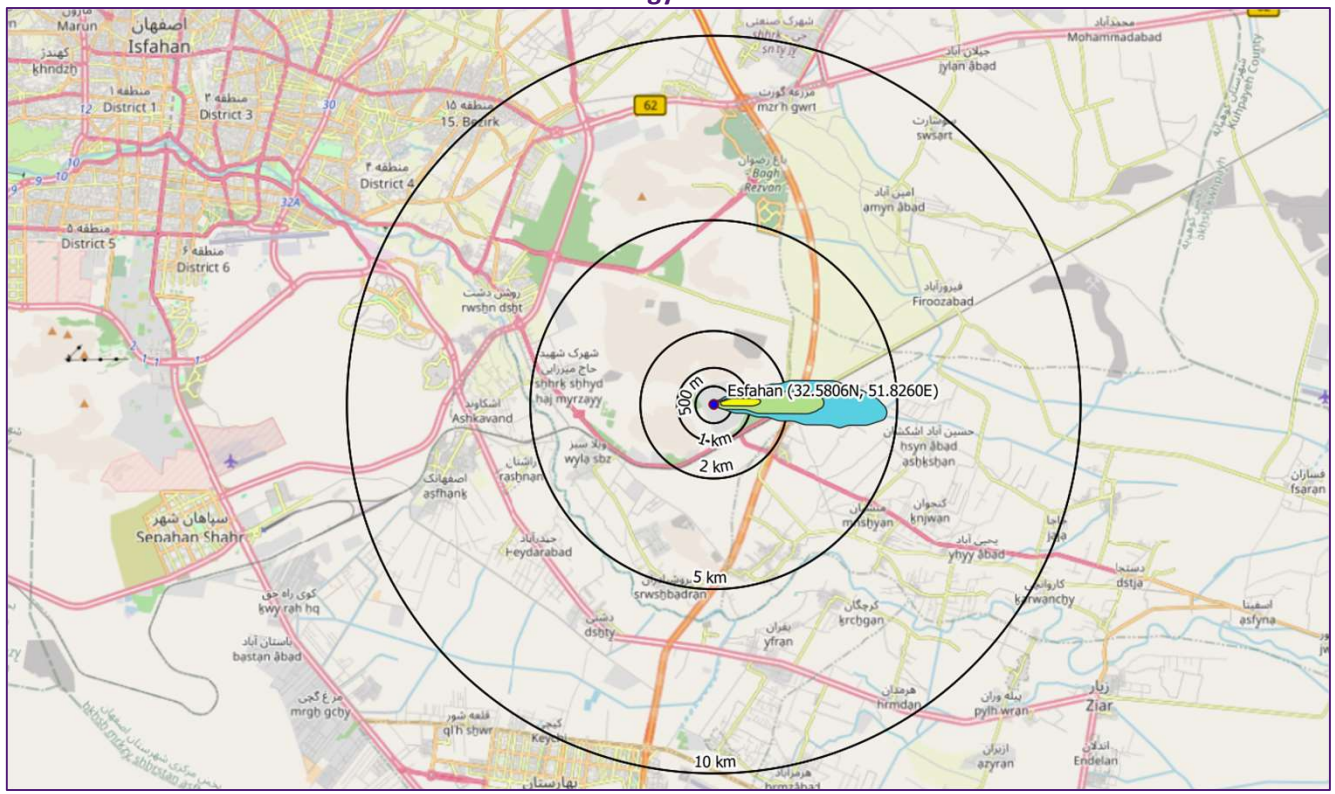
COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the south-east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran

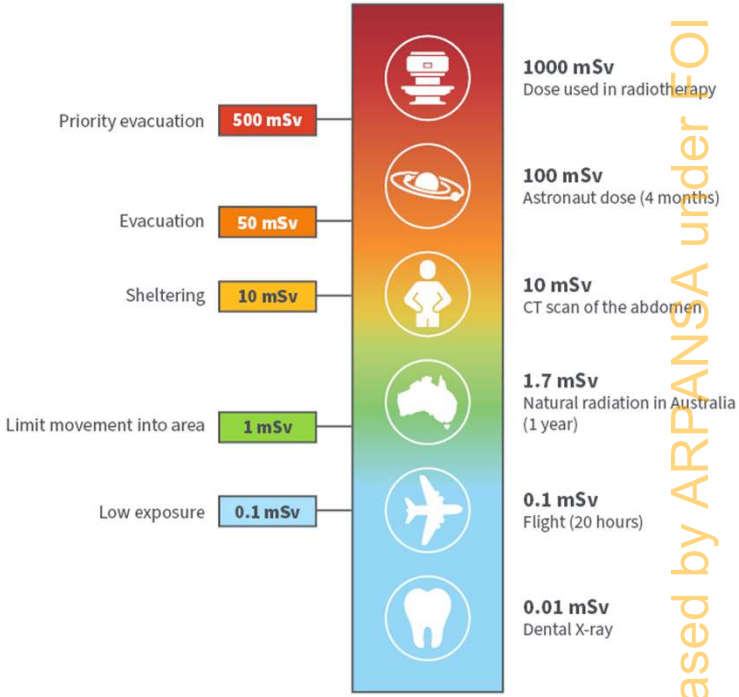


Modelled release at 12:00 AEST 23 June 2025

Model generated at 08:30 AEST on 23 June 2025

Figure 7

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

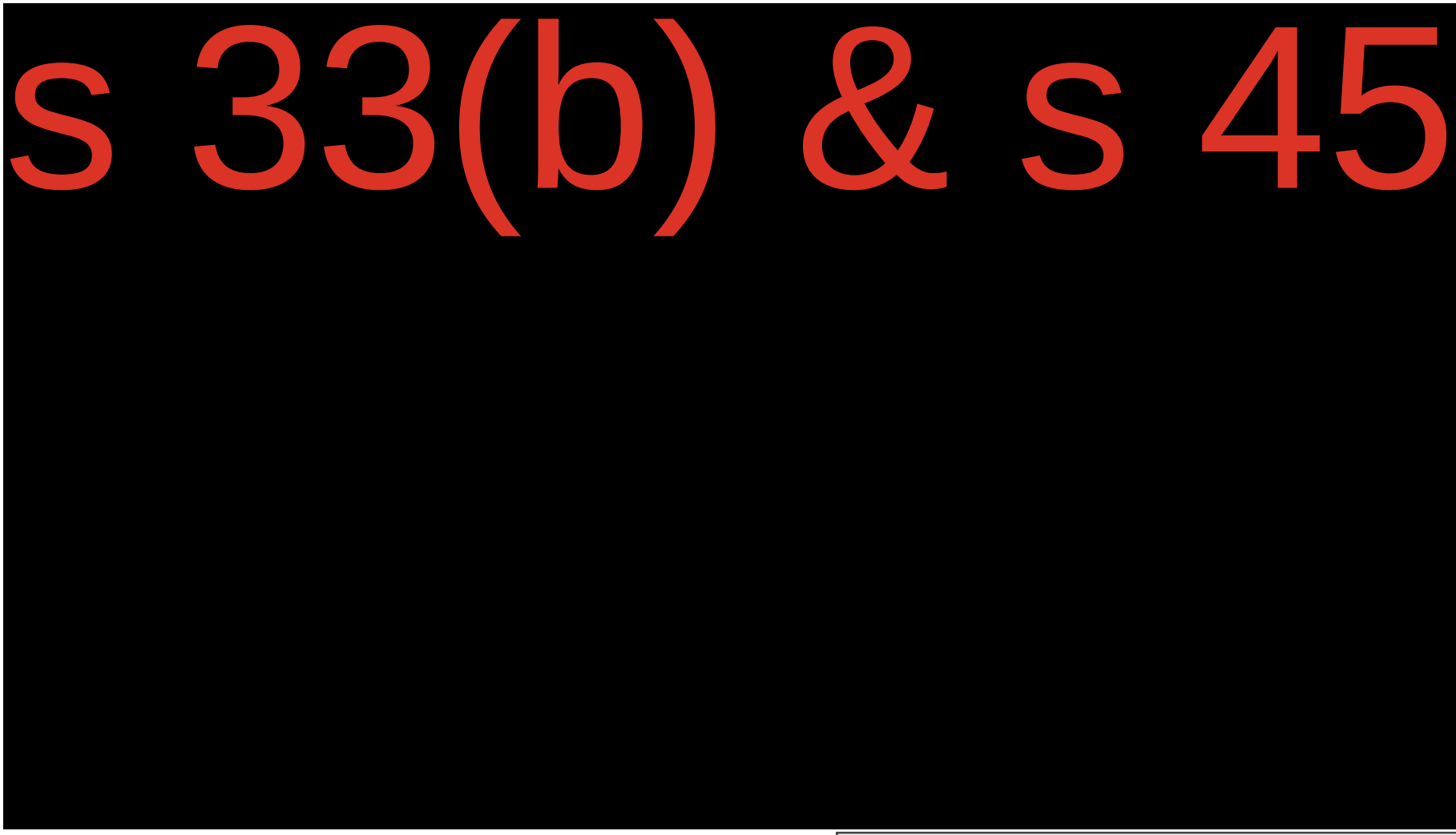


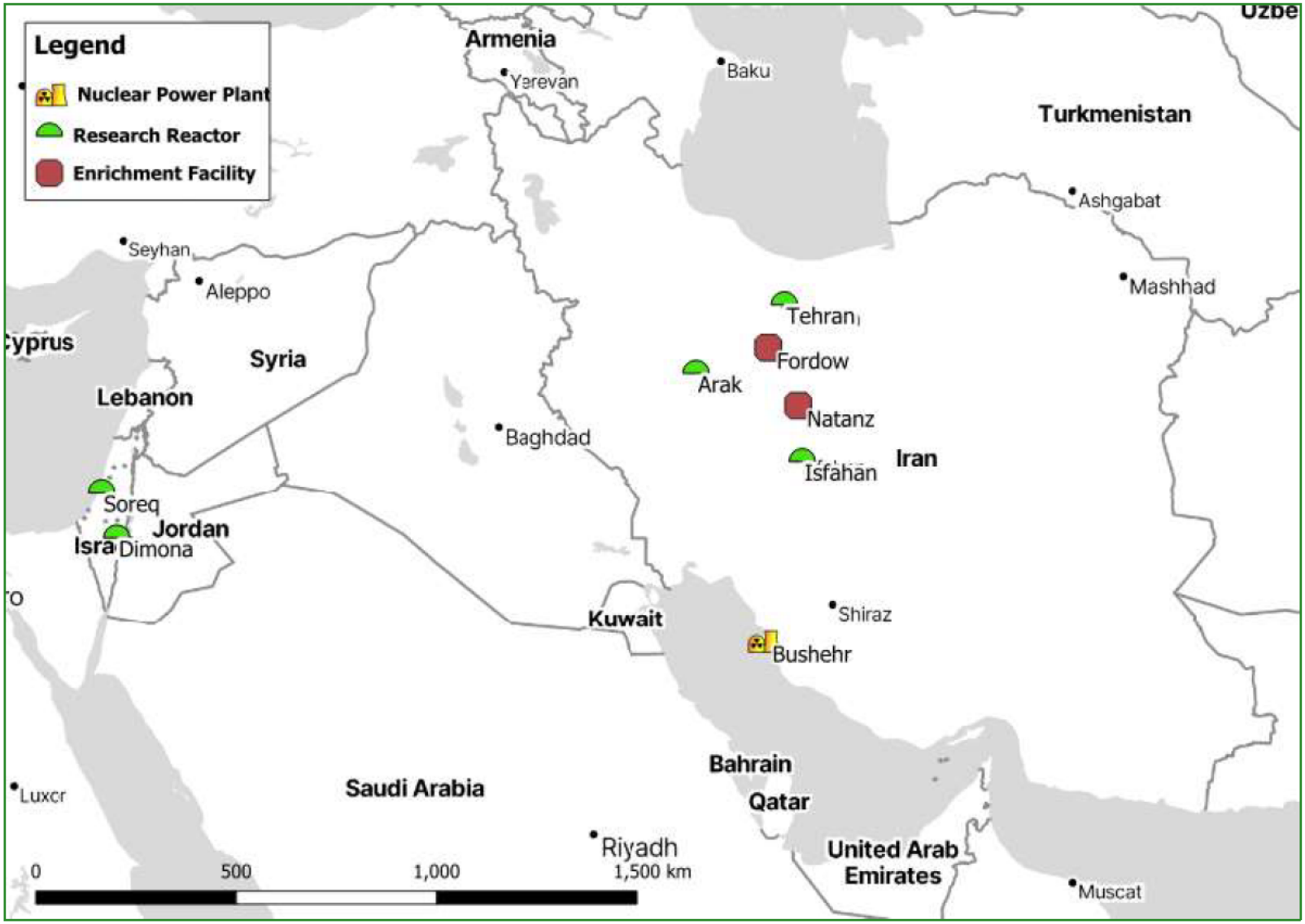
Figure 8 s 33(b) & s 45

NOTE – IRMIS data was not available for download on 23 June 2025 from 08:00 – 10:00 AEST. The detector network is still functional, and IAEA has stated that no off-site increase in radiation levels has been detected as a result of the strikes.

International Radiation Monitoring Information System (IRMIS)
A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel



Locations of nuclear facilities in Iran and Israel

Figure 9

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

Israel has conducted a series of attacks in Iran since 13 June 2025 including repeated strikes on Iranian nuclear sites at Natanz, Esfahan and Fordow. The United States has also conducted military strikes on these facilities on 22 June 2025. The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Esfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Several small research reactors are also located at the site. These are relatively low power and are unlikely to pose a significant off-site hazard.

Modelling indicates that off-site radiological consequences from an incident at these sites would not be significant. This agrees with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site at these locations. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the strikes.

Strikes on the Arak heavy water reactor (which was under construction) and centrifuge production facilities in Karaj do not pose a radiological risk. Strikes by Iran on US military sites in Qatar do not pose a radiological risk.

Iran has launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. Of these sites, the greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel.

Credible worst-case scenarios for Bushehr, Natanz, Esfahan, and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 24 June 2025 10:00 AEST

KEY MESSAGES

- US military strikes targeted the Natanz, Fordow, and Esfahan nuclear facilities on 22 June 2025. Israel has also conducted additional strikes at Fordow.
- Modelling indicates that off-site radiological consequences from these strikes would not be significant. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site at these locations.
- IAEA DG Grossi's statement (on 20/06/25) on the Bushehr reactor and ARPANSA's assessment are not in conflict (see page 2 of this report)
- Radiological risk to the Australian embassies in Tehran and Tel Aviv is very low due to the distance from major nuclear facilities.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

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Comments regarding IAEA Director General Grossi Statements on Bushehr reactor

ARPANSA is aware of recent statements made by IAEA Director General Grossi regarding the consequences of a potential incident at the Bushehr reactor (https://www.iaea.org/newscenter/statements/iaea-director-general-grossis-statement-to-unsc-on-situation-in-iran-20-june-2025 -):

"Let me now refer to the Bushehr Nuclear Power Plant.....In case of an attack on the Bushehr Nuclear Power Plant a direct hit could result in a very high release of radioactivity to the environment."

"Similarly, a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt, which could result in a high release of radioactivity to the environment. In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres. Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented."

Is the statement in conflict to the assessments/briefings that ARPANSA are undertaking?

The short answer is no. The modelling assessments that ARPANSA has been undertaking are showing similar distances for protective actions as within the statement by DG Grossi. s 33(a)(iii) *"In their worst-case, both scenarios would necessitate protective actions, such as evacuations and sheltering of the population or the need to take stable iodine, with the reach extending to distances from a few to several hundred kilometres."*

s 33(a)(iii) The distance band that he is referring to relates to a range of protective actions and encompasses the urgent and early protective actions. s 33(a)(iii) as shown by the table on the lower right taken from the IAEA Protection Strategy 2020 and IAEA Protective Actions 2013. The table (see lower right) shows that urgent actions would be required to a distance of around 30 km (this is the UPZ planning zone in the table). These actions are evacuation, sheltering and iodine tablets, using the IAEA criteria.

The ARPANSA modelling assessments show similar requirements for urgent protective actions. Some of our modelling is showing that actions such as sheltering may be required at distances of 10's of km from the Bushehr NPP.

The *"several hundred kilometres"* statement is in reference to the need to restrict the consumption of food and water (this is the ICPD distance in the table). This is based on incurring a dose from ingestion over the year. s 33(a)(iii) Radiation monitoring would need to cover distances of several hundred kilometres and food restrictions may need to be implemented. This statement is referring to the protective actions out to that extended distance. Our modelling is showing similar distances for actions such as food restrictions.

On the part of the statement referring to the loss of offsite power *"a hit that disabled the only two lines supplying electrical power to the plant could cause its reactor's core to melt"*. While this is true to an extent, and there would be an enhanced risk of a reactor core meltdown, the reality is that there are several safety features in place that would limit this occurring. These include the use of diesel generators, back-up battery systems, emergency core cooling systems etc. Over the past years we have seen that the off-site power to the Zaporizhzhia Nuclear Power Plant in Ukraine has been lost, resulting in the use of back-up systems to maintain reactor safety. The Bushehr and Zaporizhzhia Nuclear Power Plants are both VVER type nuclear reactors.

KEY POINTS

- IAEA DG Grossi's statement and ARPANSA assessments are not in conflict.
- DG Grossi's statement on protective actions is not referring to urgent actions such as evacuation being required out to several hundred kilometres.
- IAEA's guidance documents advise that urgent actions (e.g. sheltering) out to 10's of kms. ARPANSA assessment is similar to this.
- Food restrictions and monitoring may be required out to 'several hundred kms', the ARPANSA assessment shows similar for the action of food restrictions.
- Should the external power to the reactor be lost, there are many back-up systems that are used to maintain the safety of the reactor. Although it is not an ideal state for a nuclear reactor, the back-up systems mean that a core meltdown would not be an immediate concern.

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TABLE I-1. APPROXIMATE RADII OF EMERGENCY PLANNING ZONES AND DISTANCES AROUND THE REACTOR SITES

Emergency planning zones and distances	Approximate radii (km)	
	Nuclear Power Reactor (LWR, 2000 MW(th))	Research Reactor (100 MW(th))
PAZ	5	3
UPZ	30	15
EPD	100	50
ICPD	300	100

Protective actions that may be required following an incident at the Bushehr Nuclear Power Plant

Should there be a large release of radioactive material from the Bushehr Nuclear Power Plant, radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local Directions: Follow local directions provided with regard to protective actions such as evacuation.

ARPANSA assessment indicates that this protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

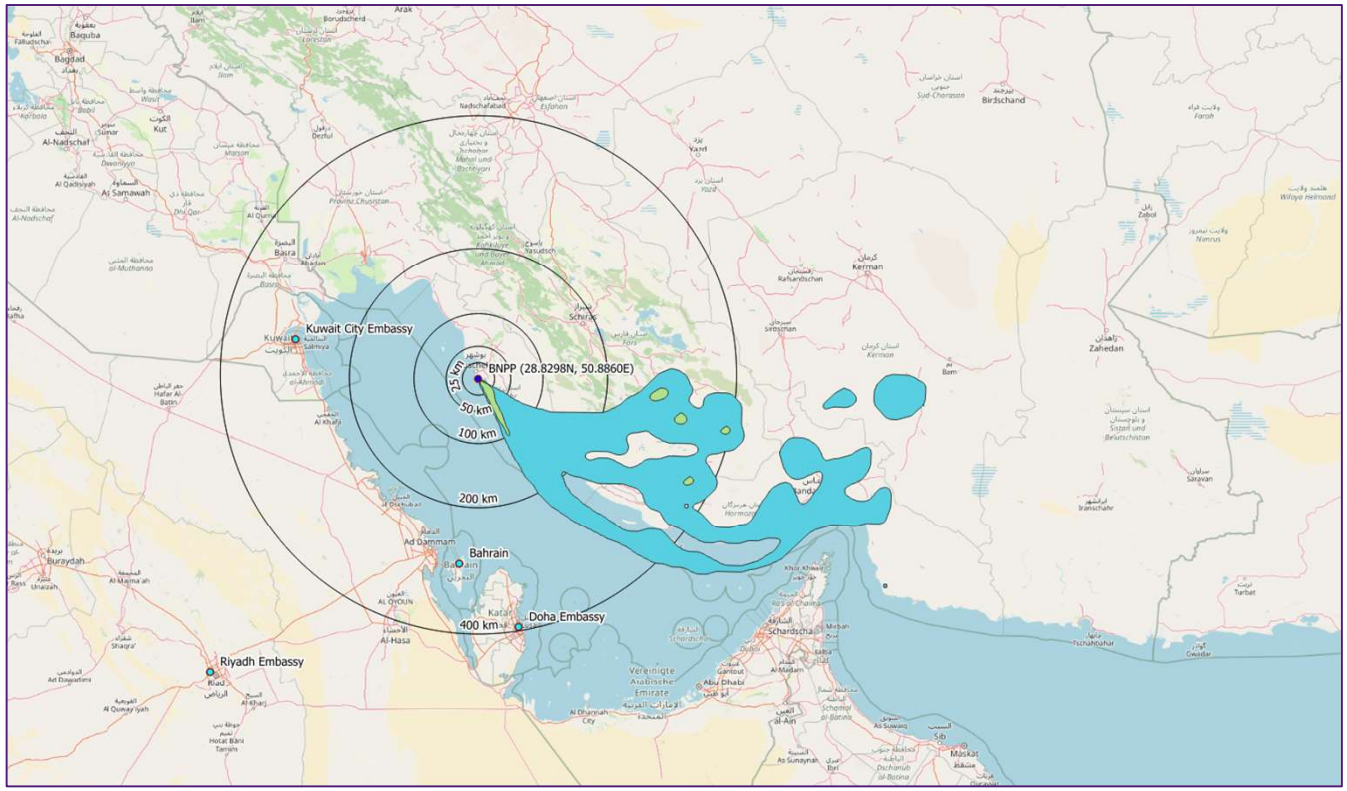
Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran

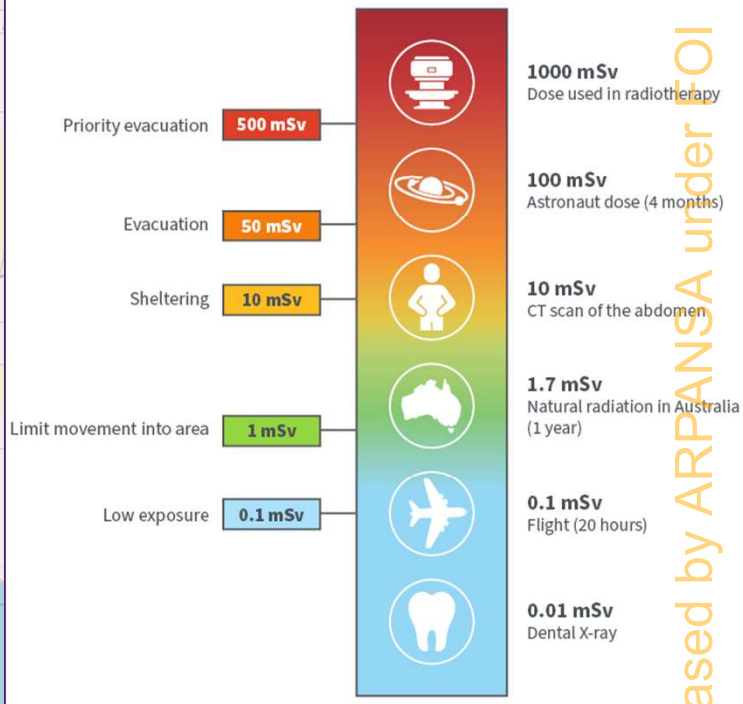


Modelled release at 12:00 AEST 24 June 2025

Model generated at 08:30 AEST on 24 June 2025

Figure 1

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 3000 MWt.

COMMENTS

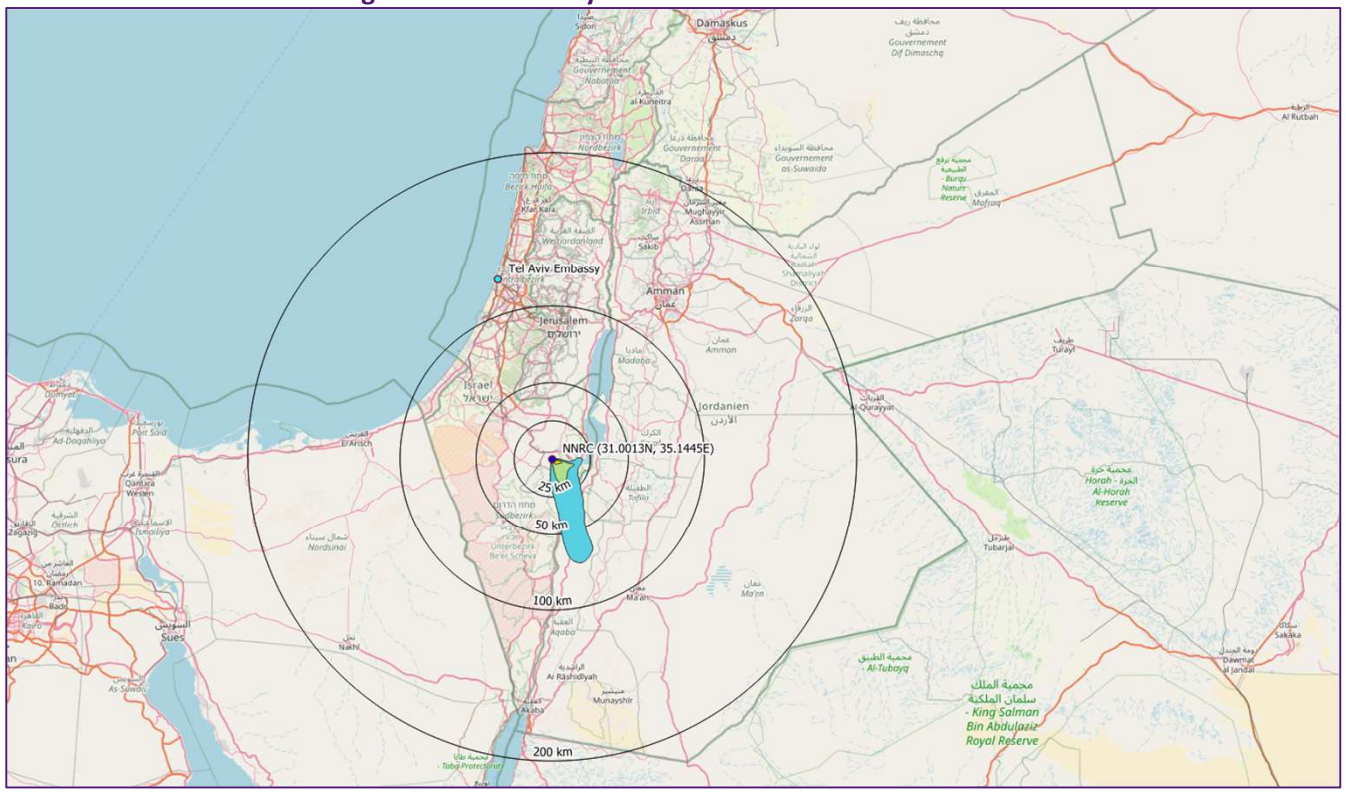
Atmospheric modelling at this time shows plume direction to the south and south-east of the site. The simulation shows that protective actions such as sheltering in place or the issue of stable iodine tablets may be required up to 50 km from the site. Evacuation of some areas may be required up to 10 km from the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.
Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

Note: The Bushehr Nuclear Power Plant generates approximately 1.7% of the annual electricity produced in Iran.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel

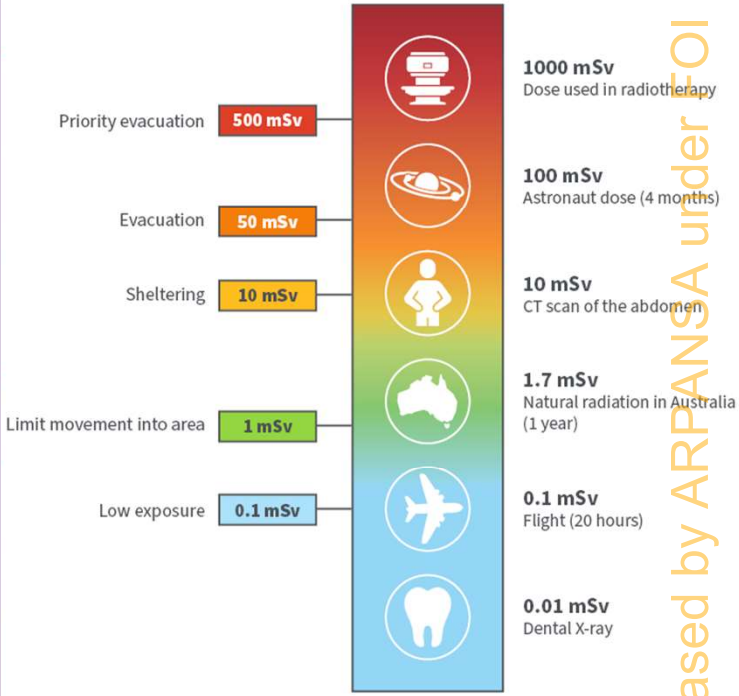


Modelled release at 12:00 AEST 24 June 2025

Model generated at 08:30 AEST on 24 June 2025

Figure 2

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 150 MWt.

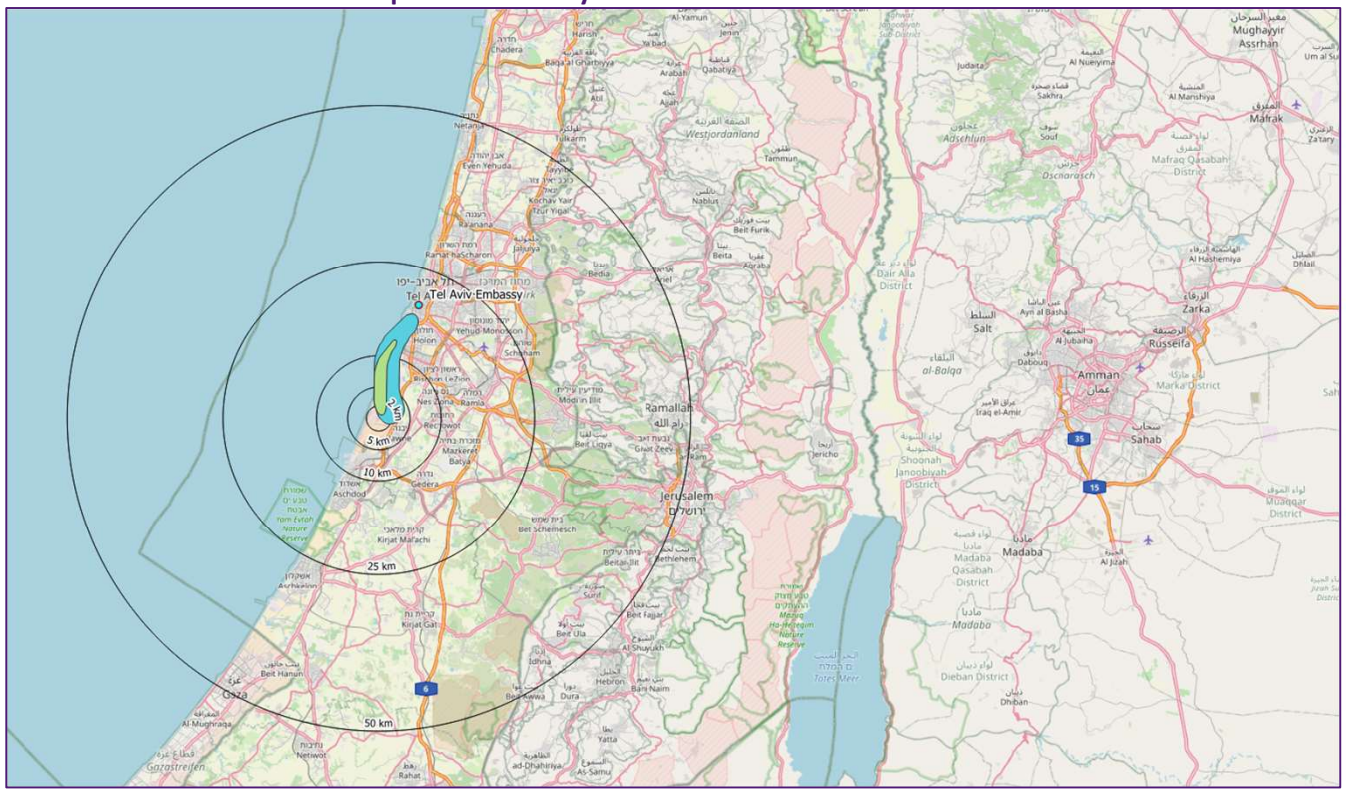
COMMENTS

Atmospheric modelling at this time shows plume direction to the south of the site. The simulation shows that consequences requiring protective actions such as sheltering in place or the issue of stable iodine tablets from this scenario are likely to be limited to less than 20 km. Evacuation may be required very close to the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel

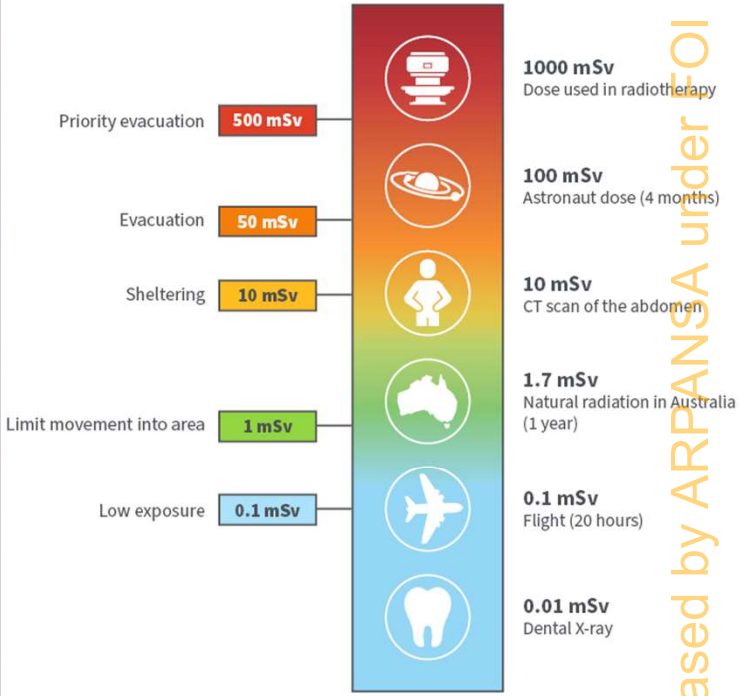


Modelled release at 12:00 AEST 24 June 2025

Model generated at 08:30 AEST on 24 June 2025

Figure 3

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

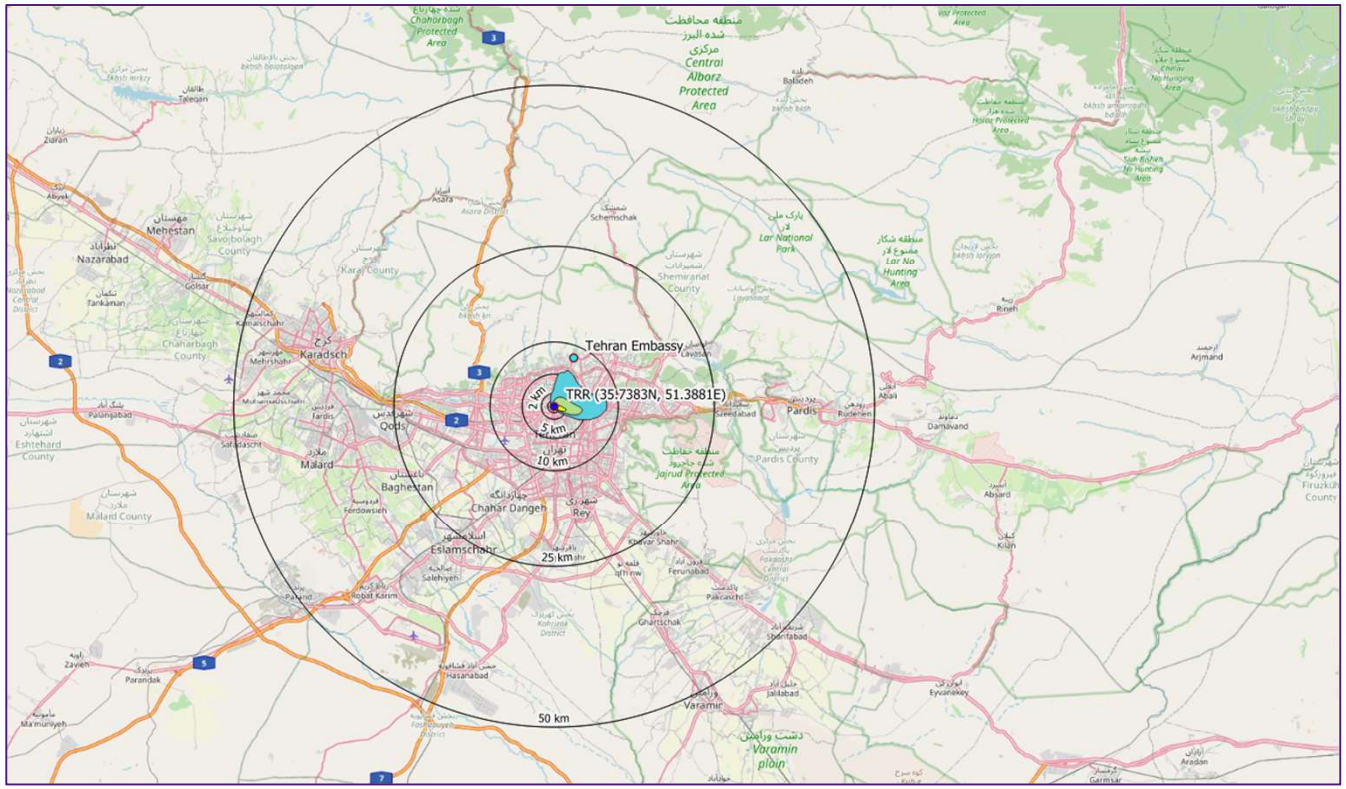
COMMENTS

Atmospheric modelling at this time shows plume direction to the north of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran

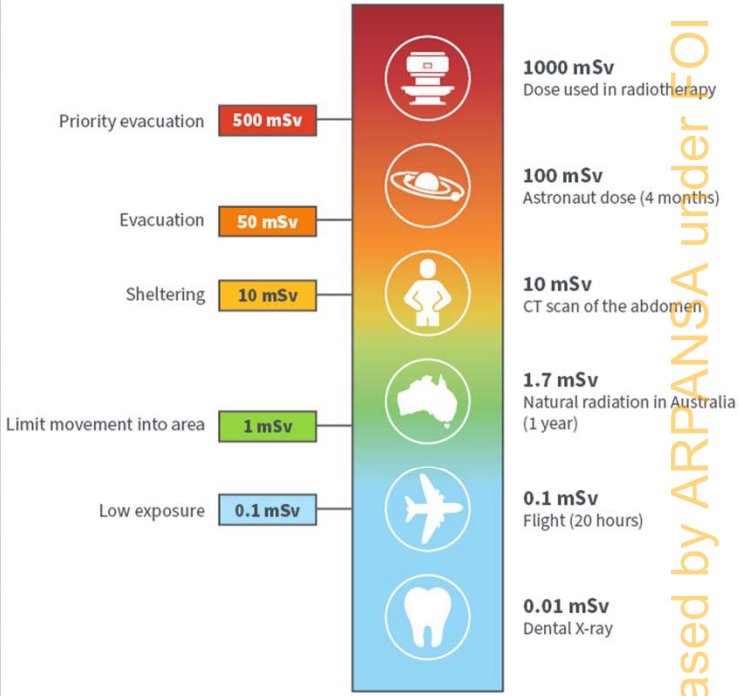


Modelled release at 12:00 AEST 24 June 2025

Model generated at 08:30 AEST on 24 June 2025

Figure 4

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

COMMENTS

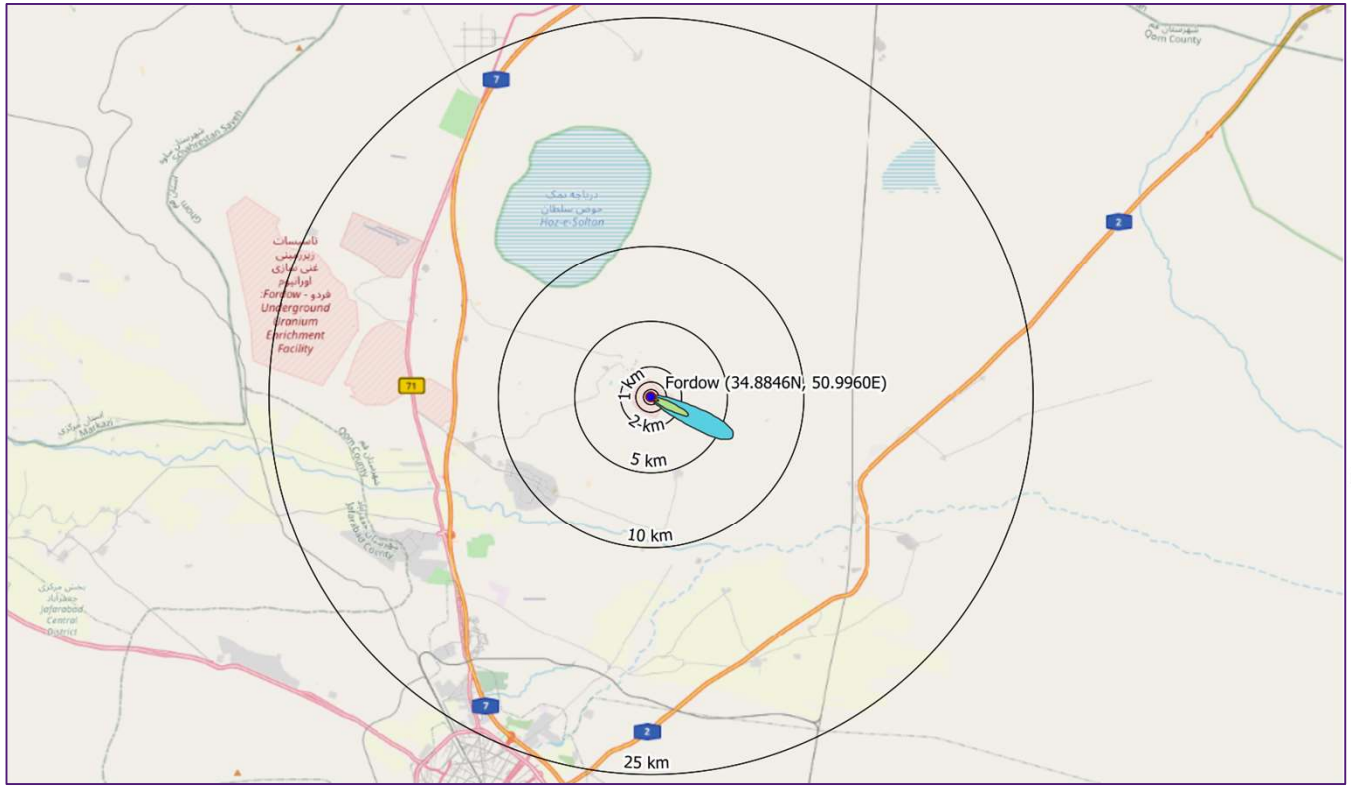
Atmospheric modelling at this time shows plume direction to the east of the site. The simulation shows that potential radiological exposure is low and urgent protective actions would be limited to within several kms of the site.

Radiological risk at the Australian embassy in Tehran is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any protective actions would be required at the embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran

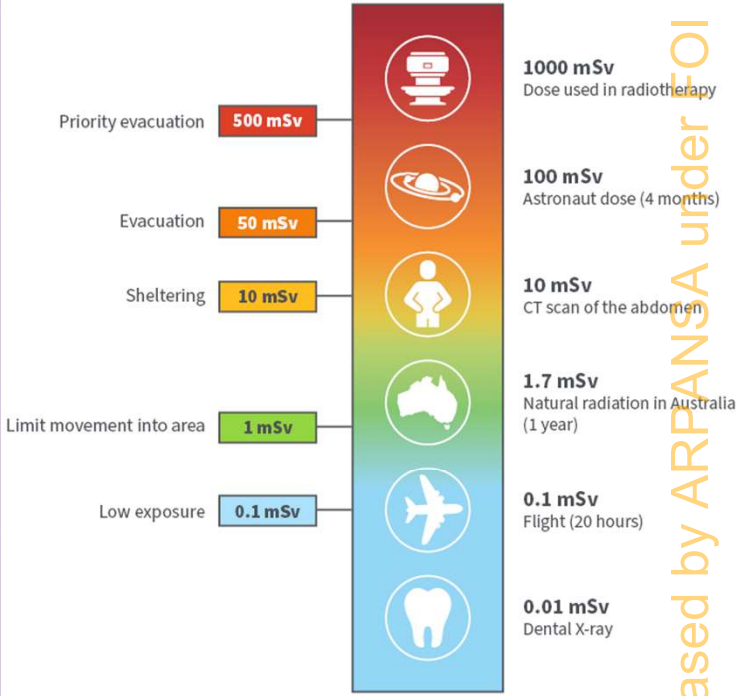


Modelled release at 12:00 AEST 24 June 2025

Model generated at 08:30 AEST on 24 June 2025

Figure 5

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

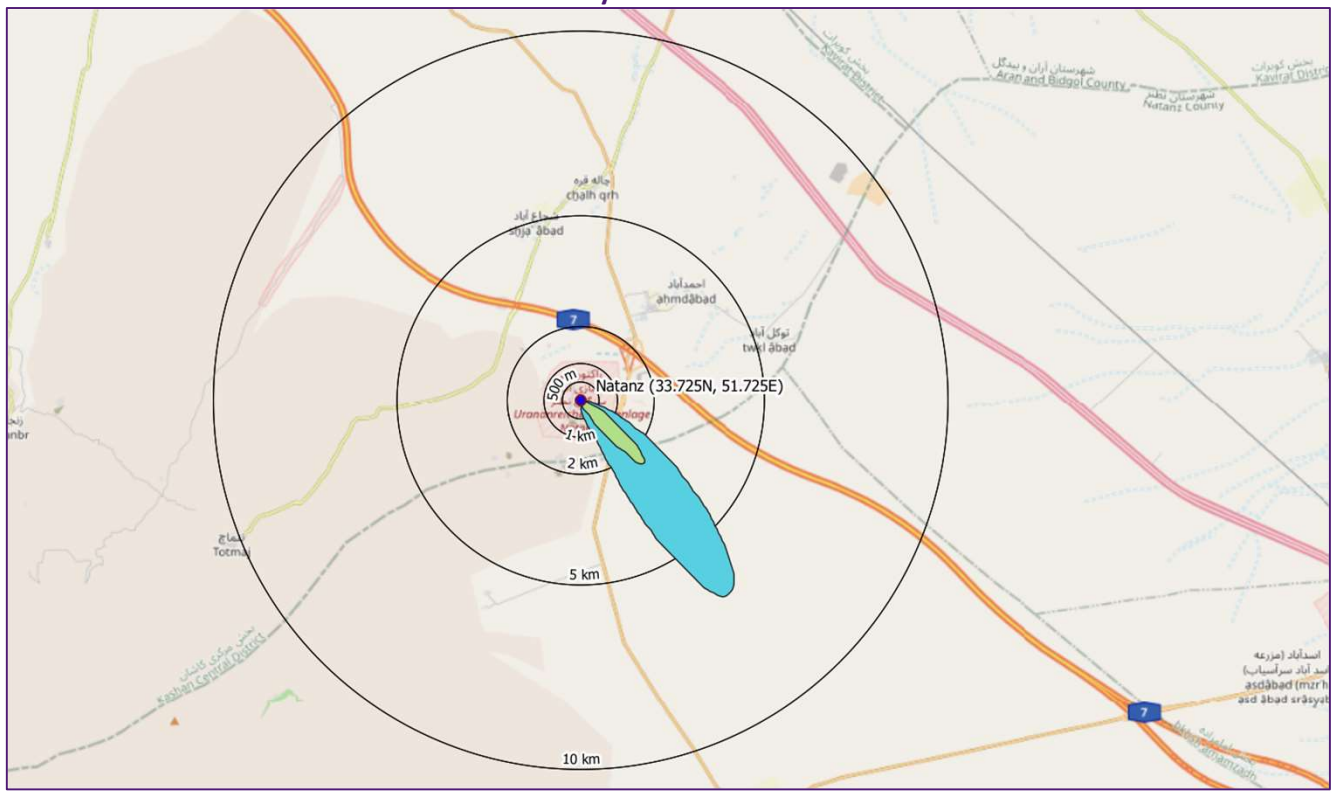
COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran

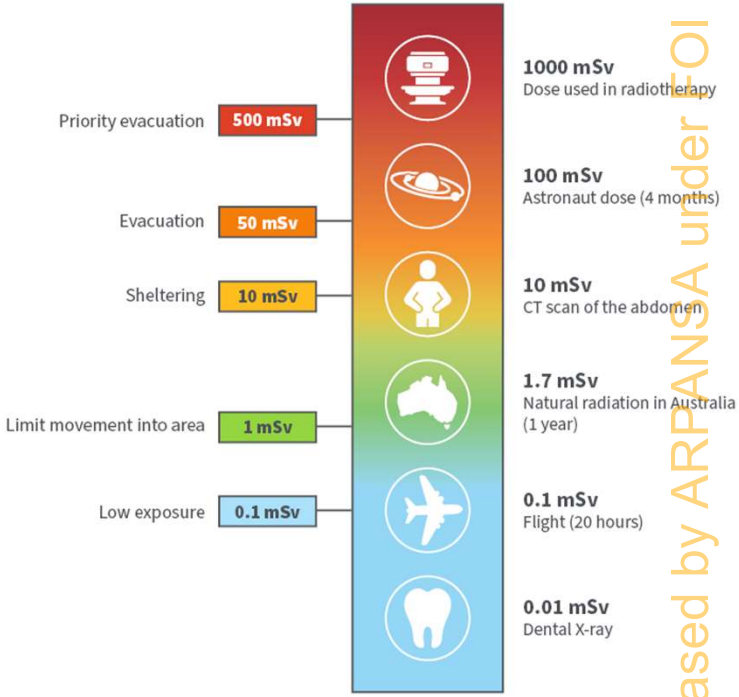


Modelled release at 12:00 AEST 24 June 2025

Model generated at 08:30 AEST on 24 June 2025

Figure 6

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

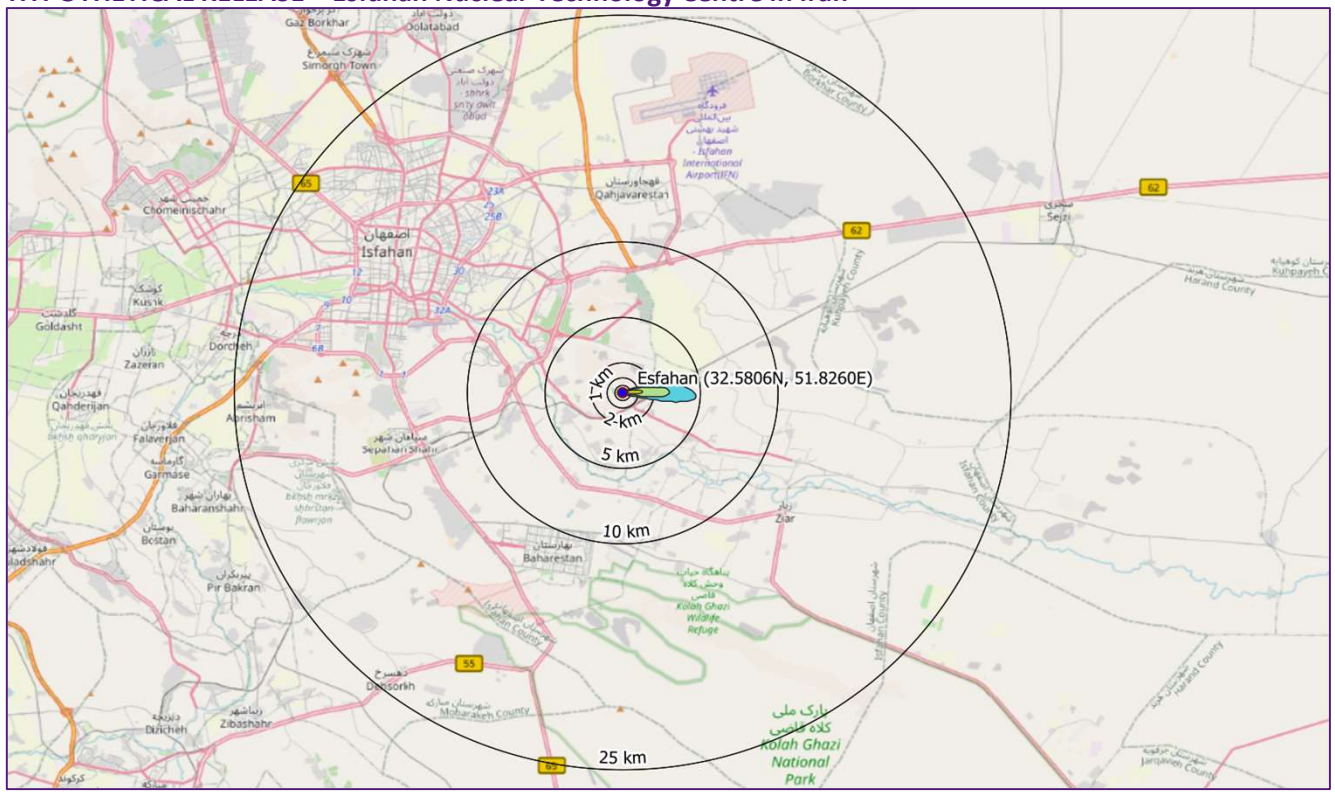
COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the south-east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.

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HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran

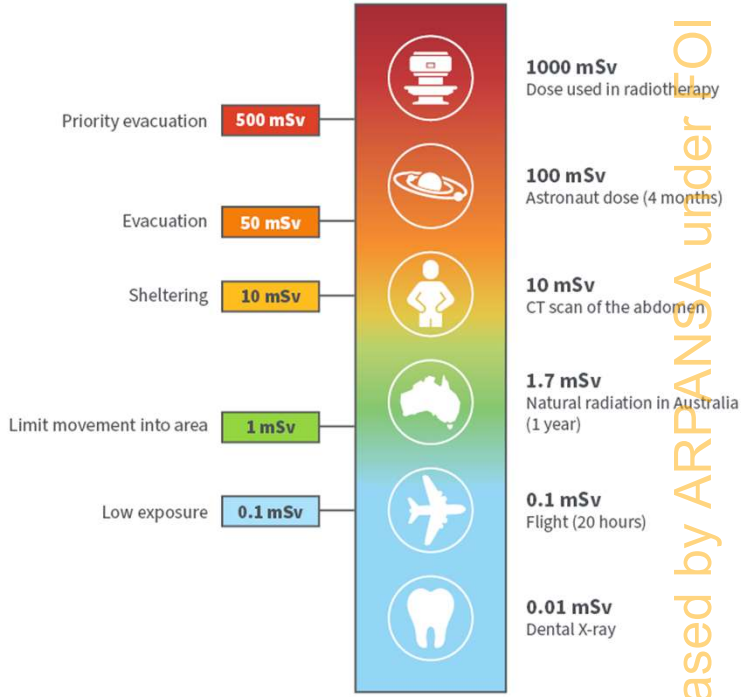


Modelled release at 12:00 AEST 24 June 2025

Model generated at 08:30 AEST on 24 June 2025

Figure 7

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



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RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

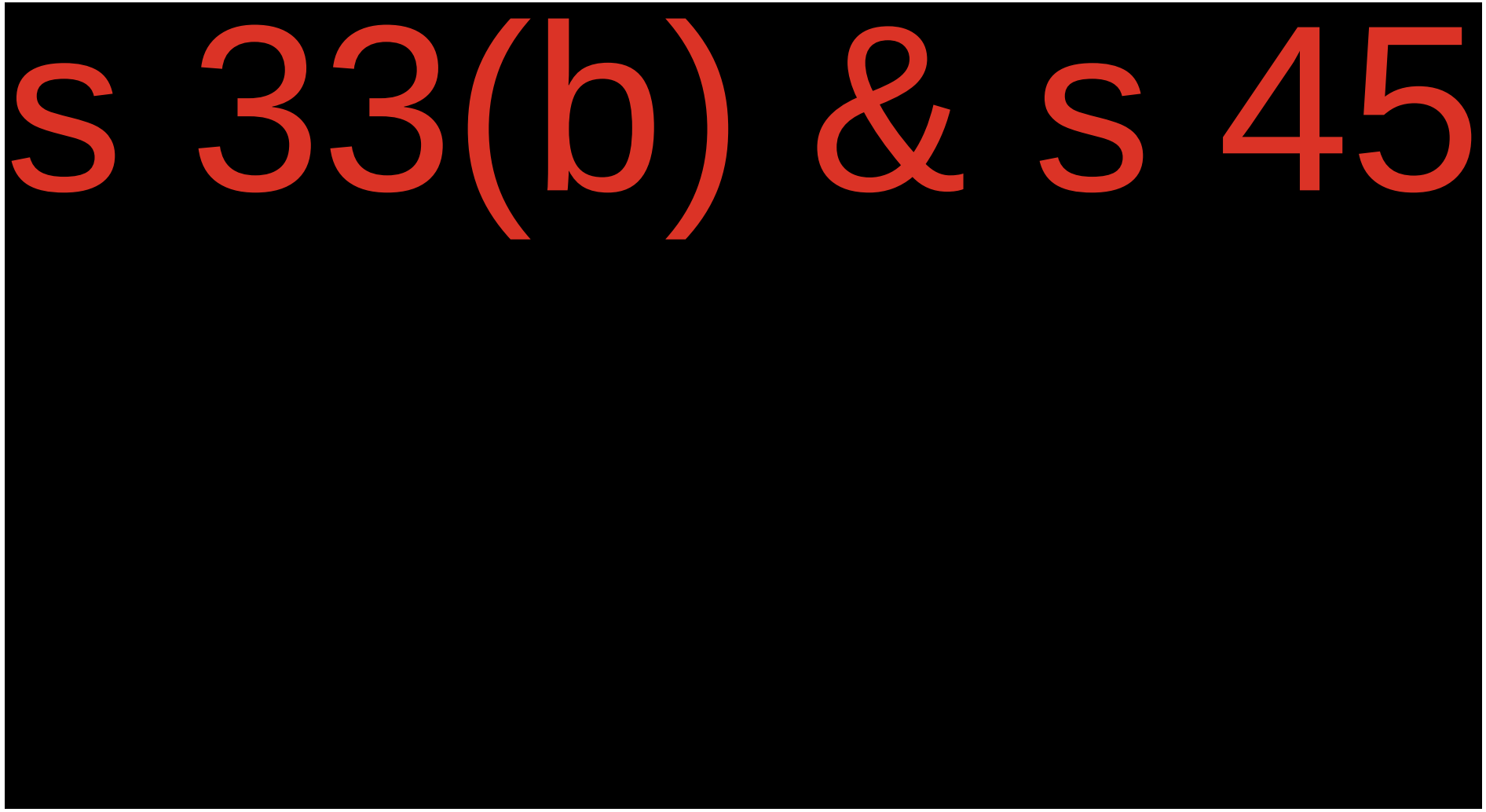


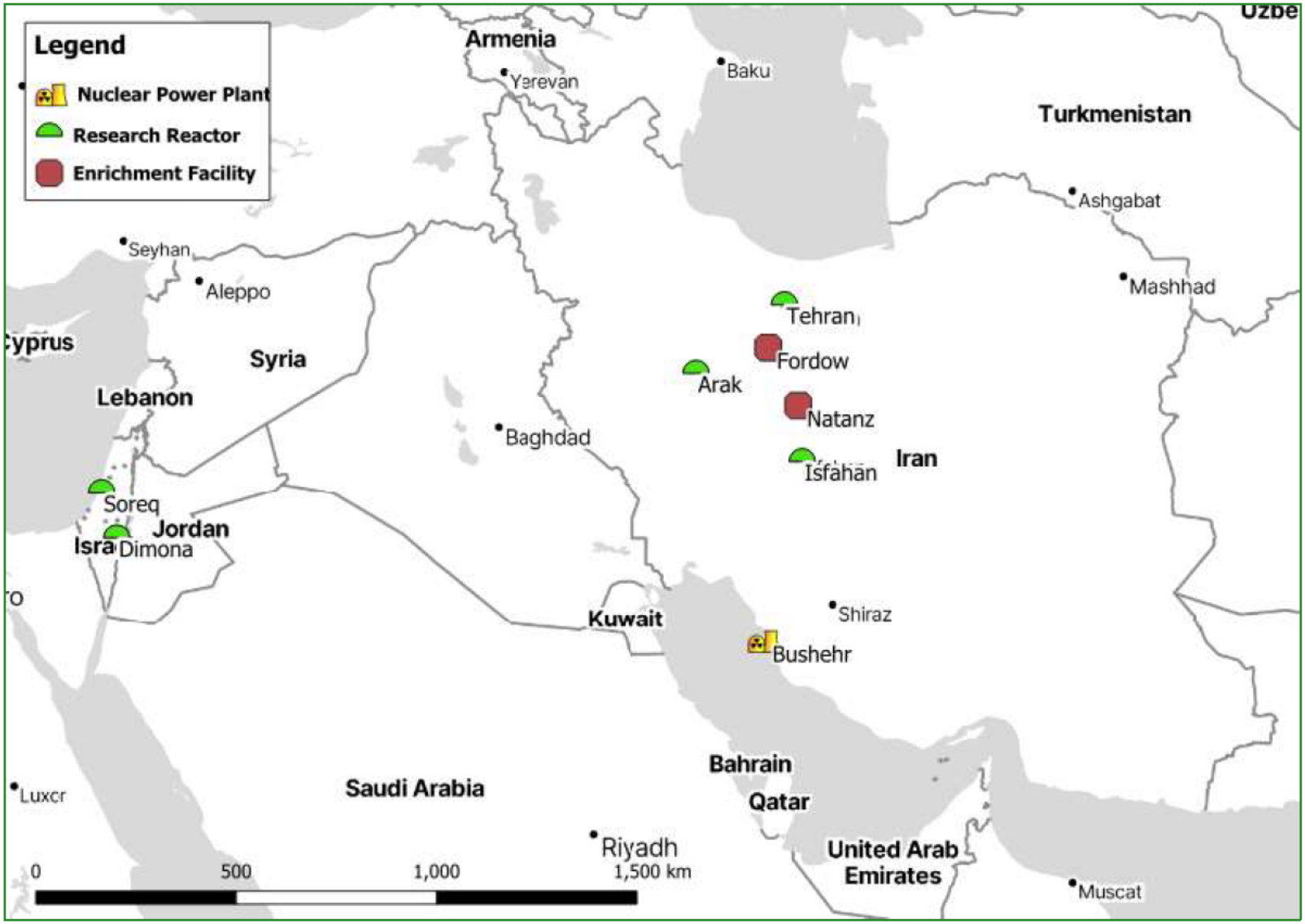
Figure 8 s 33(b) & s 45

IAEA has stated that no off-site increase in radiation levels have been detected as a result of the strikes.

International Radiation Monitoring Information System (IRMIS)
A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel



Locations of nuclear facilities in Iran and Israel

Figure 9

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

Israel has conducted a series of attacks in Iran since 13 June 2025 including repeated strikes on Iranian nuclear sites at Natanz, Esfahan and Fordow. The United States also conducted military strikes on these facilities on 22 June 2025. A ceasefire between Israel and Iran was announced by the US President on 24 June 2025. No strikes on nuclear facilities in the region have been reported following commencement of the ceasefire.

The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Esfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Modelling indicates that off-site radiological consequences from an incident at these sites would not be significant. This agrees with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site at these locations.

Strikes on the Arak heavy water reactor (which was under construction) and centrifuge production facilities in Karaj do not pose a radiological risk. Strikes by Iran on US military sites in Qatar do not pose a radiological risk. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the strikes.

Iran launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. Of these sites, the greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel.

Credible worst-case scenarios for Bushehr, Tehran, Natanz, Esfahan, and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 25 June 2025 10:00 AEST

KEY MESSAGES

- A ceasefire between Israel and Iran was announced by the US president on 24 June 2025. No strikes on nuclear facilities in the region have been reported following commencement of the ceasefire.
- Modelling indicates that off-site radiological consequences from previous strikes at Natanz, Fordow, and Esfahan facilities are not significant. Radiological and chemical contamination is likely present on-site at these locations.
- Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. It is unlikely that any urgent protective actions would be required at the embassy locations.
- In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

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Protective actions that may be required following an incident at the Bushehr Nuclear Power Plant

Should there be a large release of radioactive material from the Bushehr Nuclear Power Plant, radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local Directions: Follow local directions provided with regard to protective actions such as evacuation.

ARPANSA assessment indicates that this protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

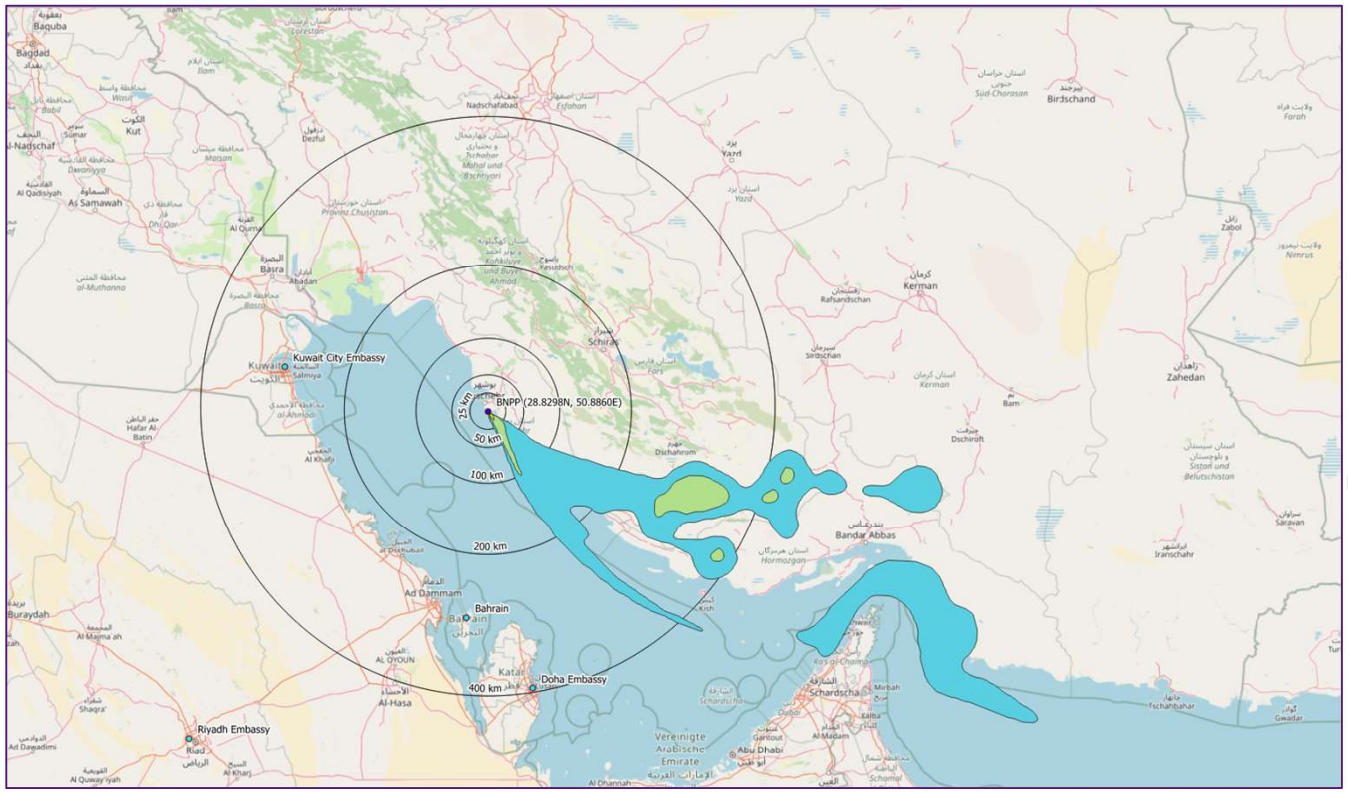
Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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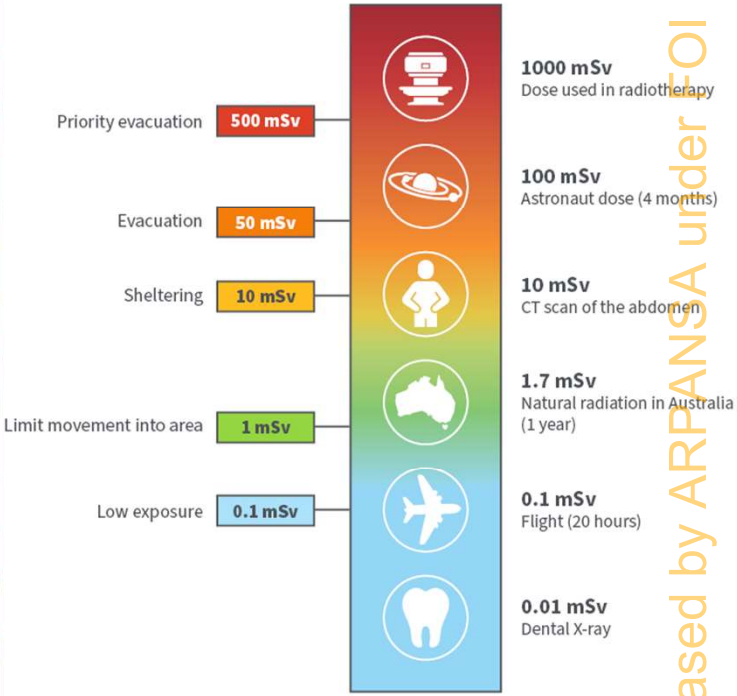
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran



Modelled release at 12:00 AEST 25 June 2025 Model generated at 08:30 AEST on 25 June 2025 *Figure 1*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

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RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 3000 MWt.

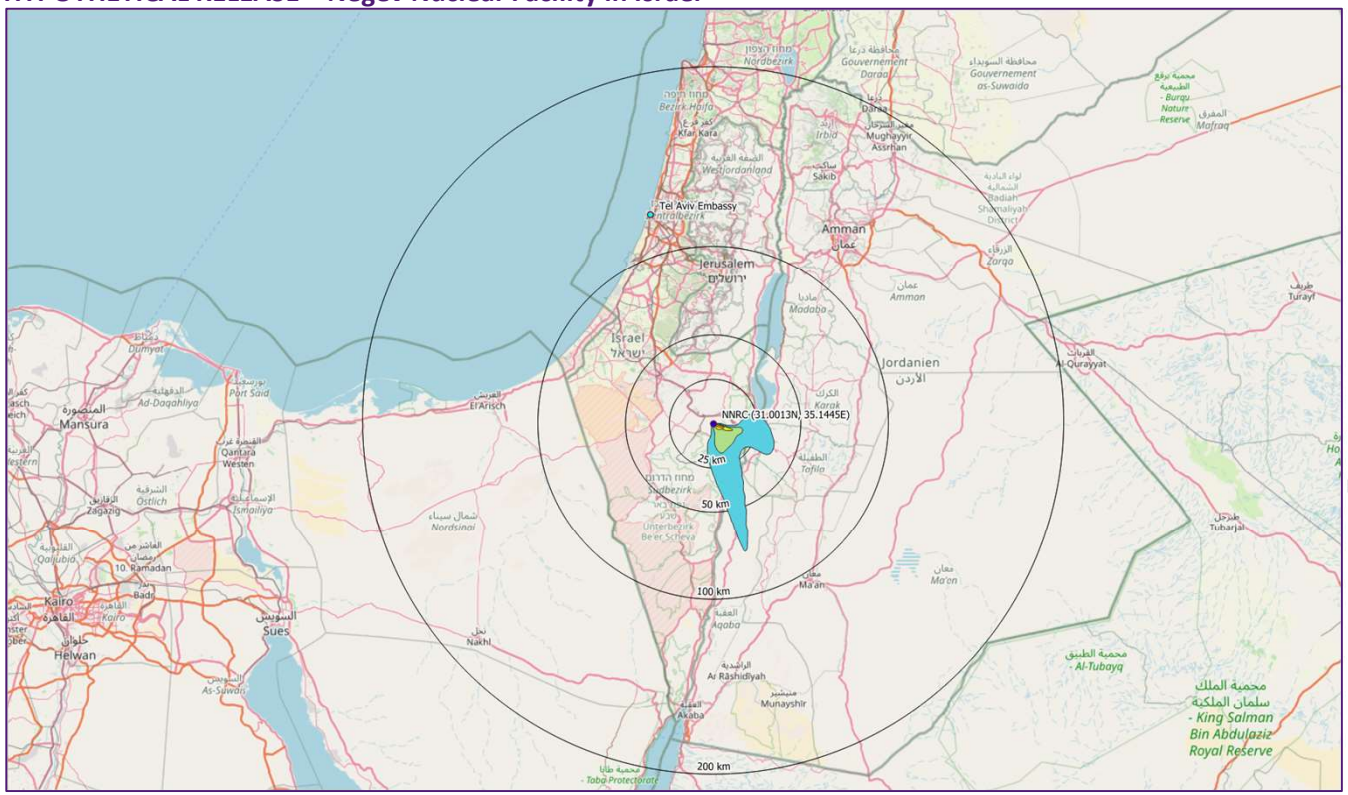
COMMENTS

Atmospheric modelling at this time shows plume direction to the south and south-east of the site. The simulation shows that protective actions such as sheltering in place or the issue of stable iodine tablets may be required up to 50 km from the site. Evacuation of some areas may be required up to 10 km from the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.
Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

Note: The Bushehr Nuclear Power Plant generates approximately 1.7% of the annual electricity produced in Iran.

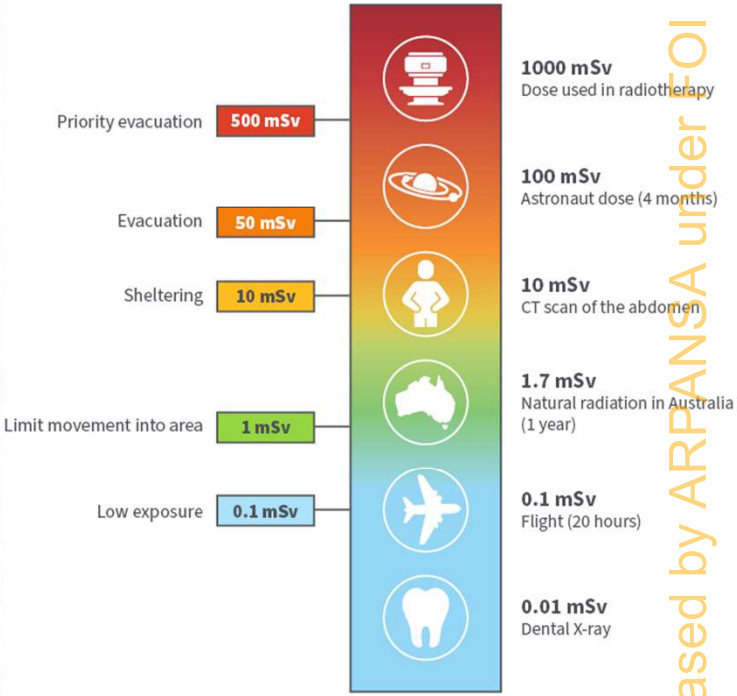
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



Modelled release at 12:00 AEST 25 June 2025 Model generated at 08:30 AEST on 25 June 2025 *Figure 2*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

Released by ARPANSA under FOI

RELEASE SCENARIO

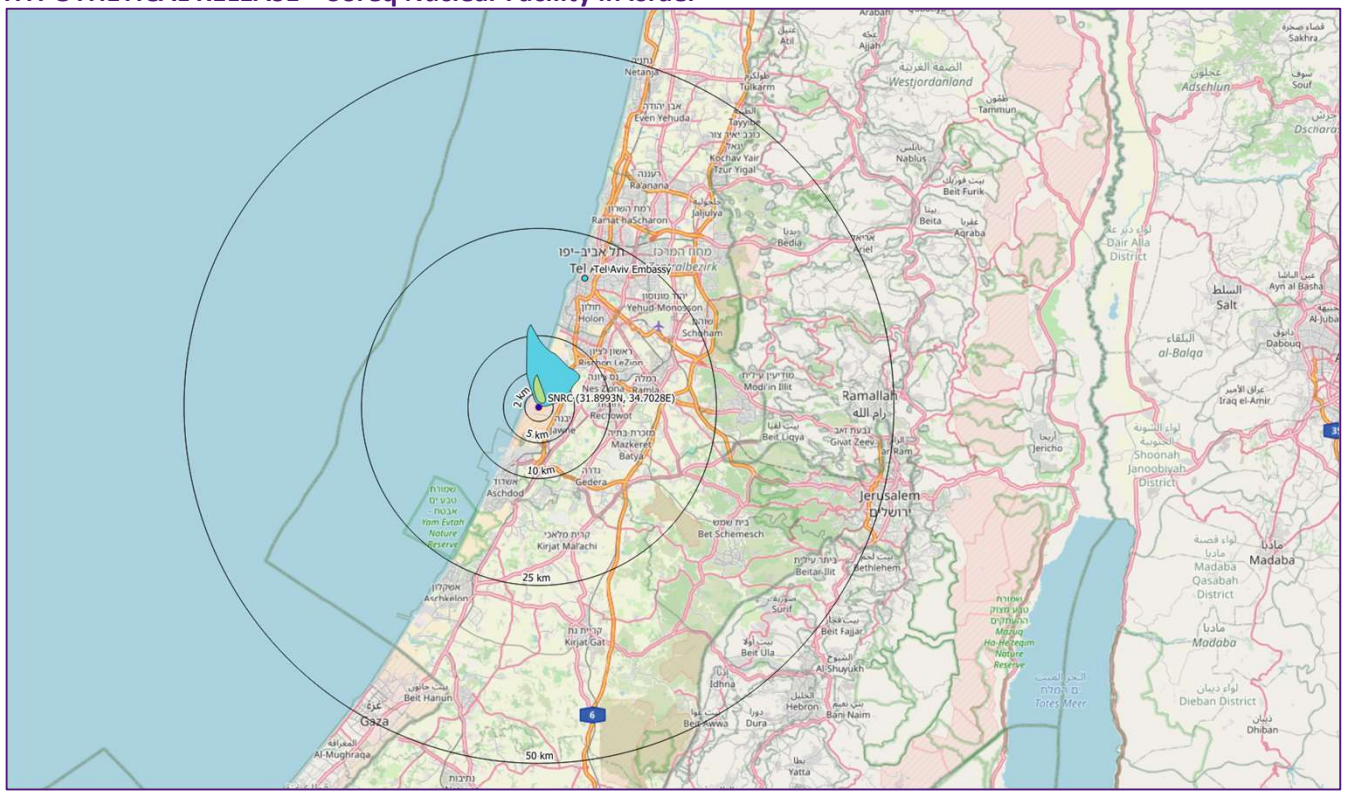
Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 150 MWt.

COMMENTS

Atmospheric modelling at this time shows plume direction to the south and east of the site. The simulation shows that consequences requiring protective actions such as sheltering in place or the issue of stable iodine tablets from this scenario are likely to be limited to less than 20 km. Evacuation may be required very close to the site. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel

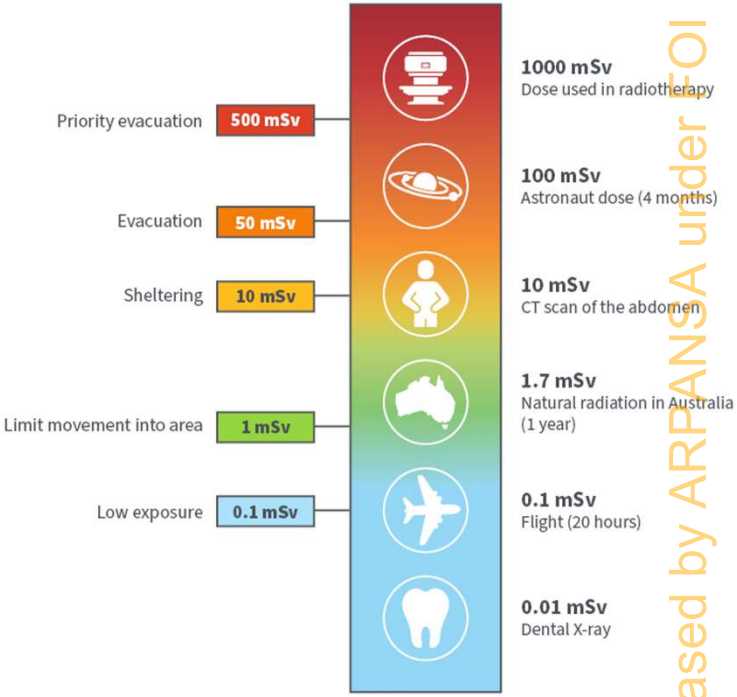


Modelled release at 12:00 AEST 25 June 2025

Model generated at 08:30 AEST on 25 June 2025

Figure 3

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

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RELEASE SCENARIO

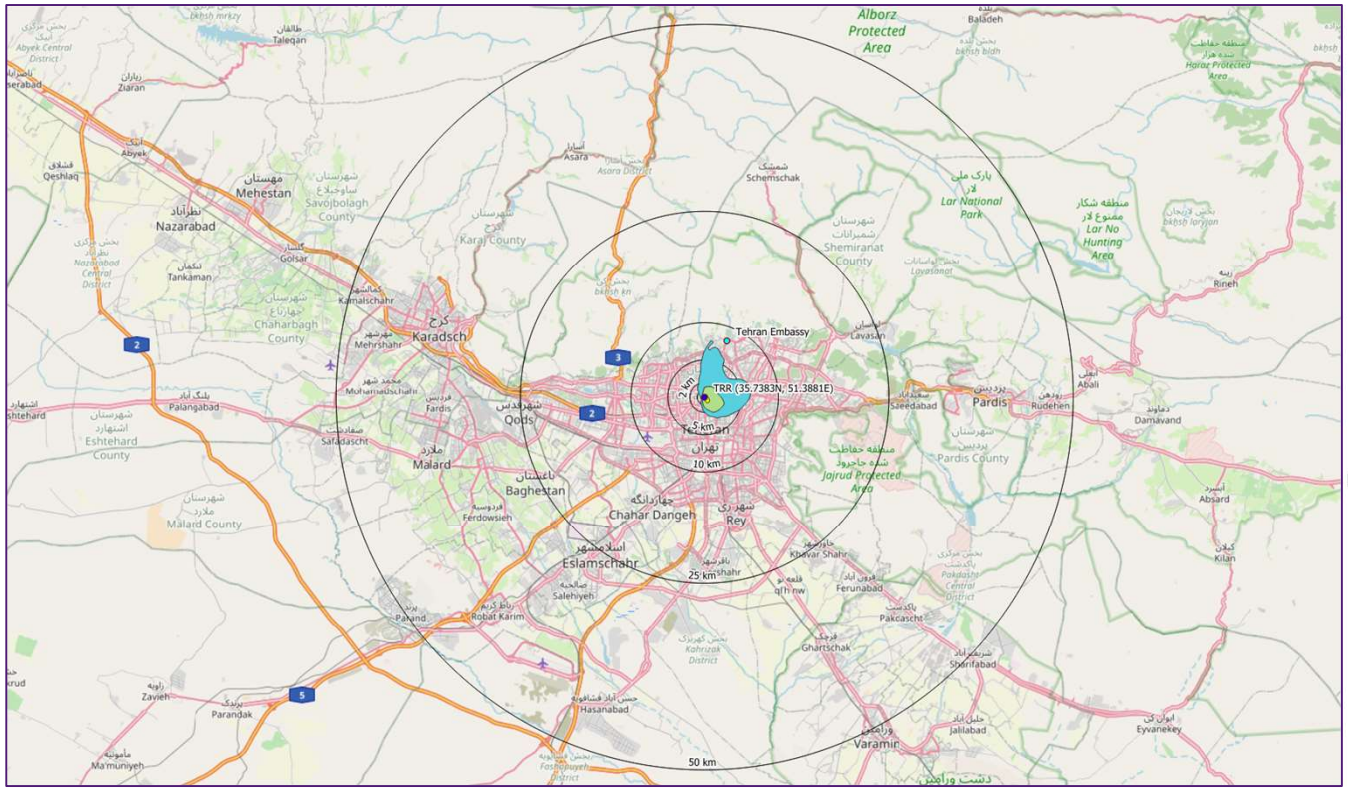
Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

COMMENTS

Atmospheric modelling at this time shows plume direction to the north and north-east of the site. The simulation shows that potential radiological exposure is low and no urgent protective actions would be required as a result of the modelled release.

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran

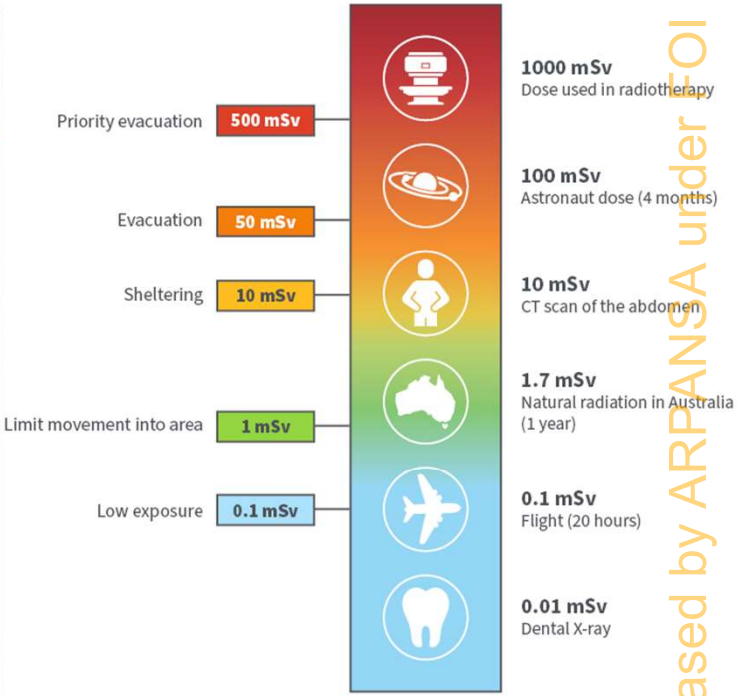


Modelled release at 12:00 AEST 25 June 2025

Model generated at 08:30 AEST on 25 June 2025

Figure 4

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

Released by ARPANSA under FOI

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

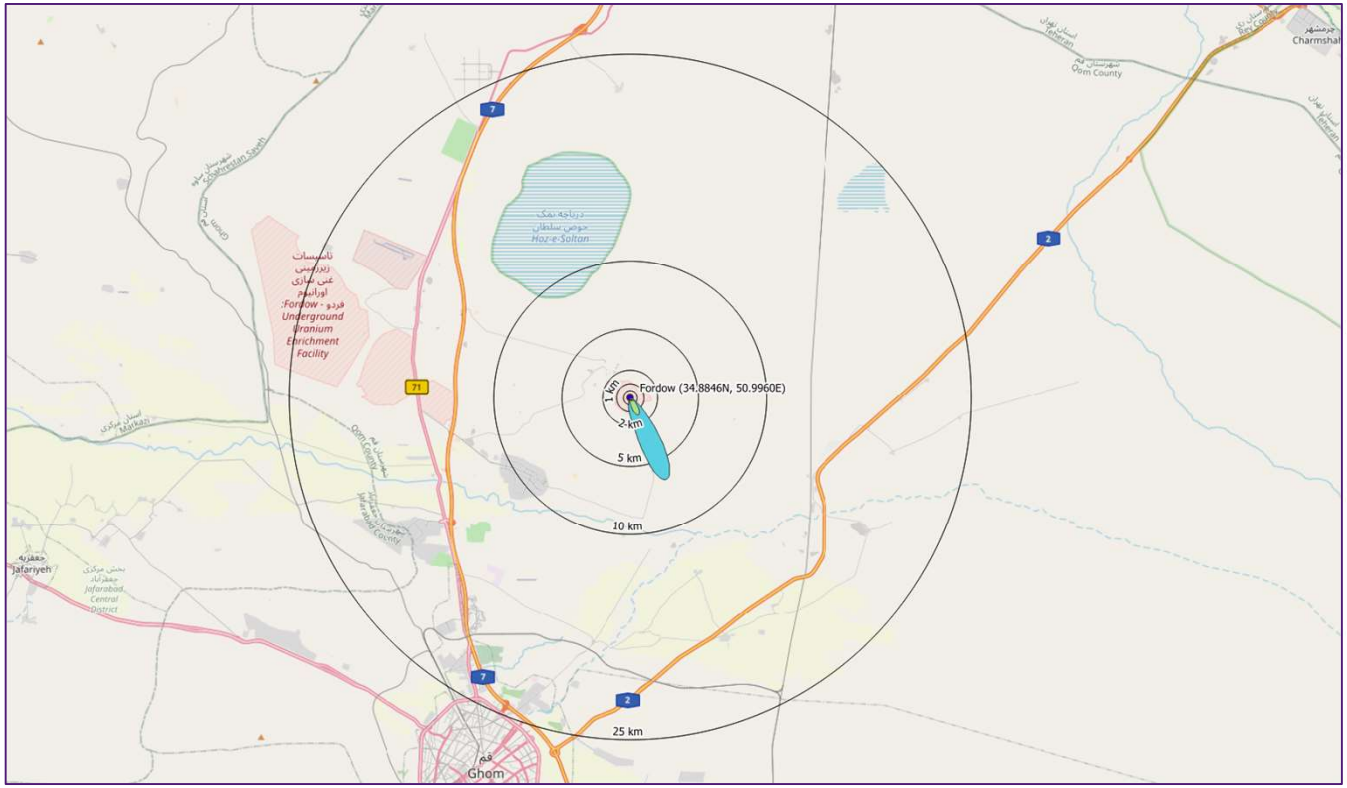
COMMENTS

Atmospheric modelling at this time shows plume direction to the east and north of the site. The simulation shows that potential radiological exposure is low and urgent protective actions would be limited to within several kms of the site.

Radiological risk at the Australian embassy in Tehran is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any protective actions would be required at the embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran

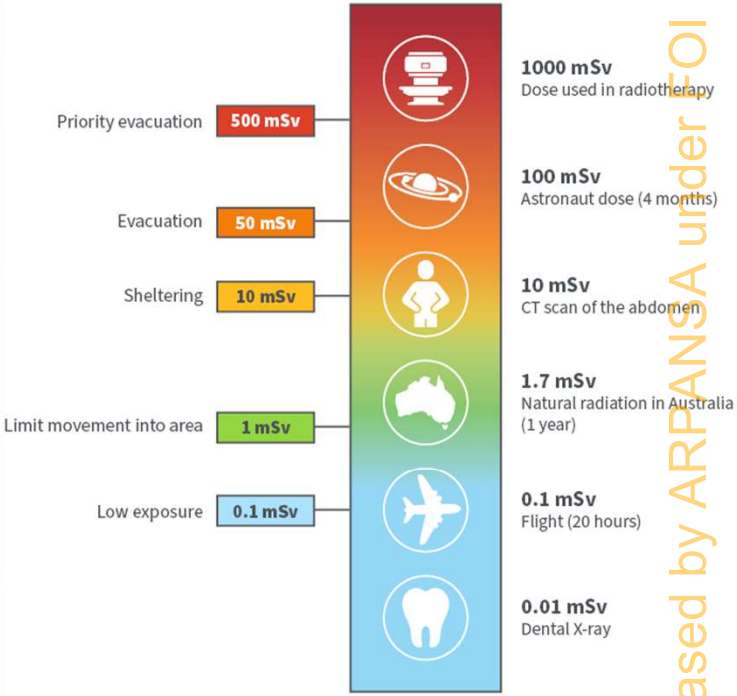


Modelled release at 12:00 AEST 25 June 2025

Model generated at 08:30 AEST on 25 June 2025

Figure 5

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

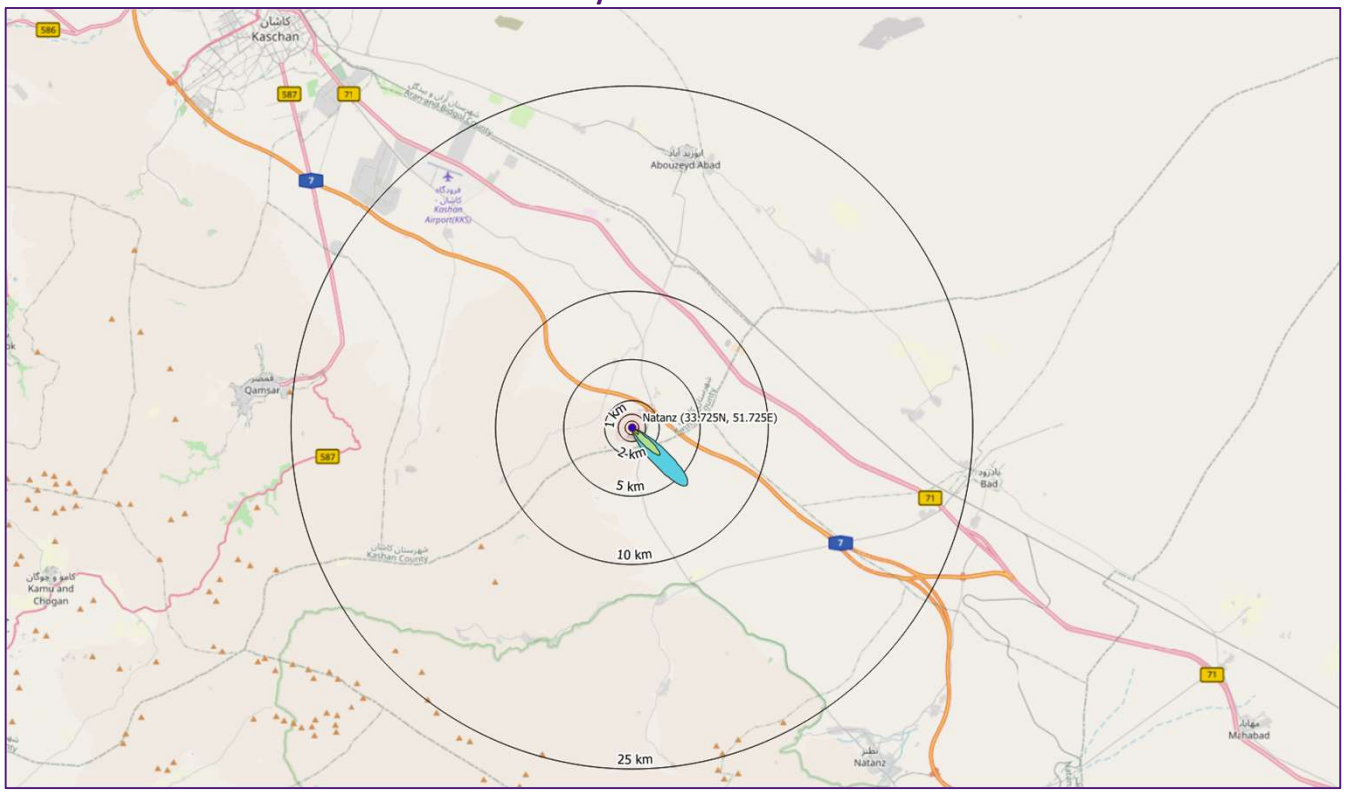
COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the south-east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.

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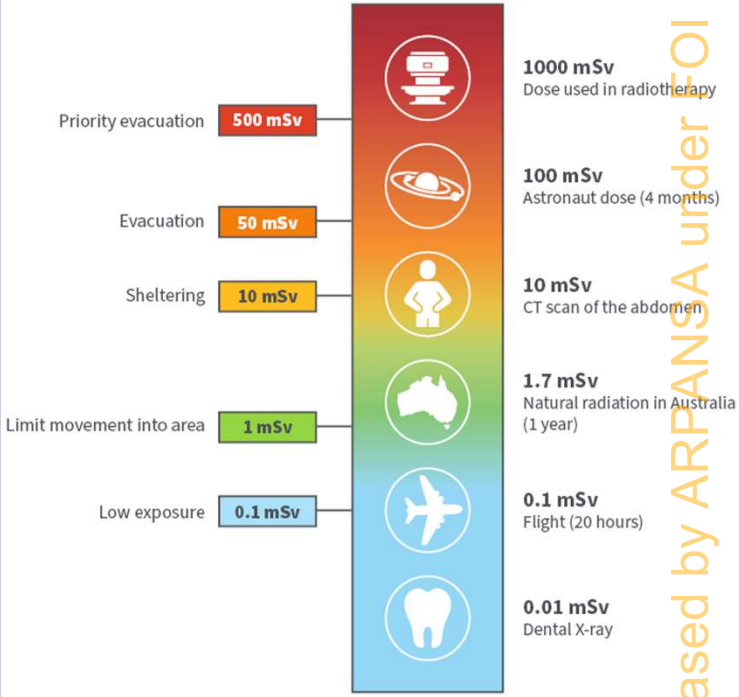
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran



Modelled release at 12:00 AEST 25 June 2025 Model generated at 08:30 AEST on 25 June 2025 *Figure 6*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

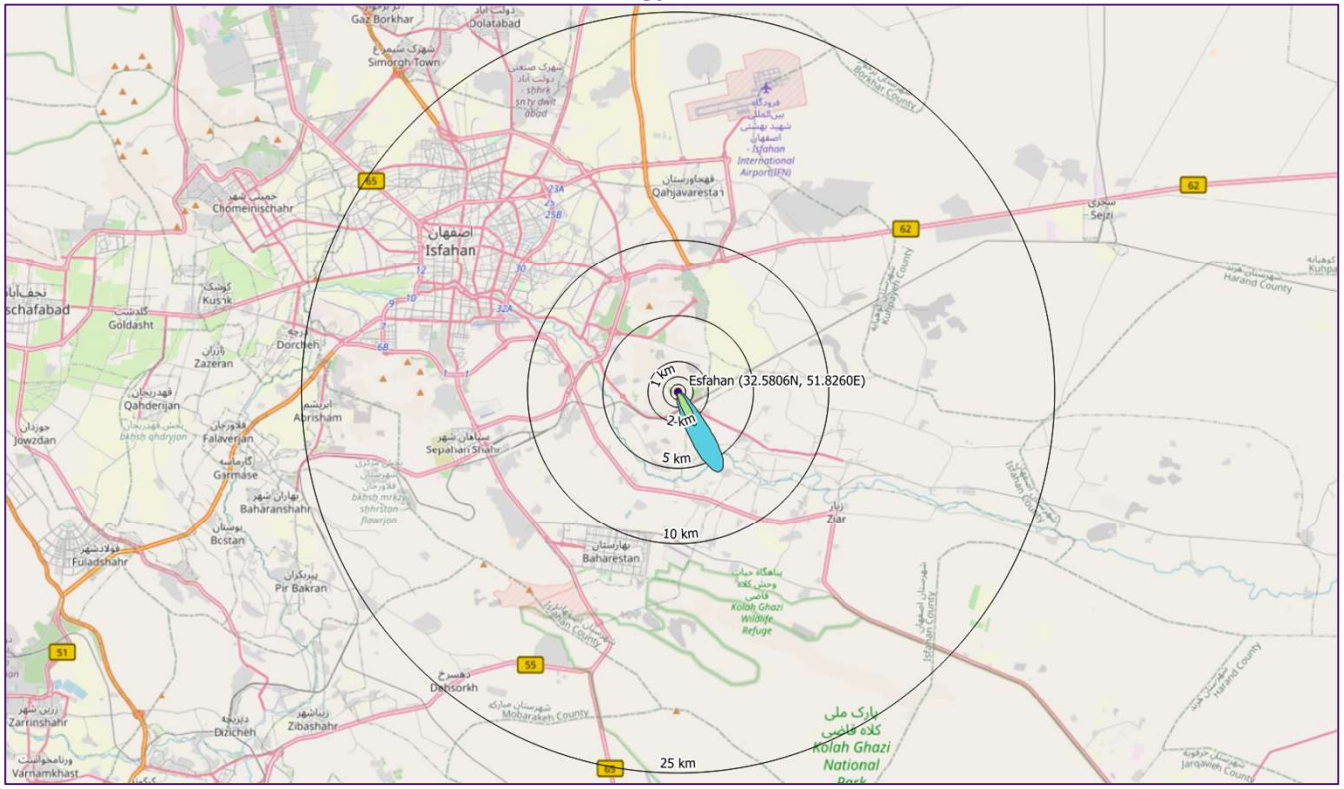
COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the south-east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.

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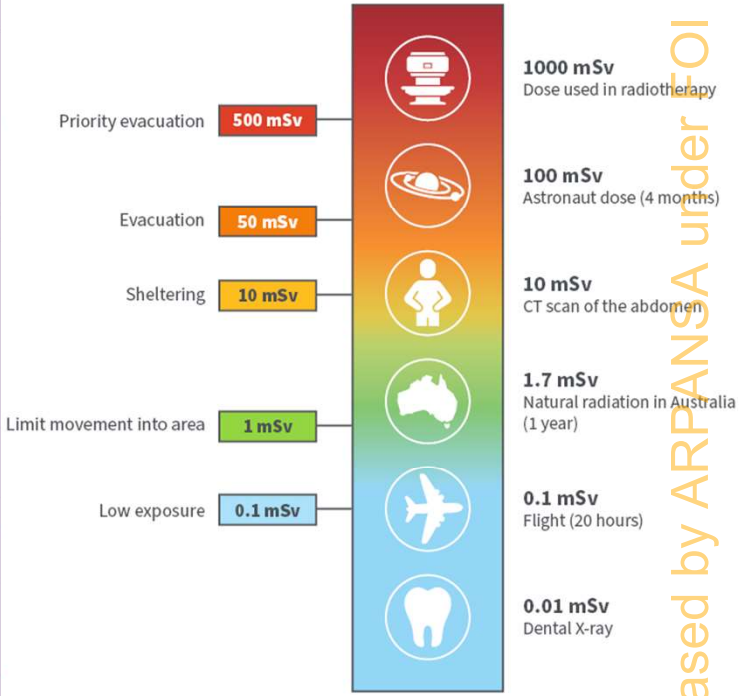
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran



Modelled release at 12:00 AEST 25 June 2025 Model generated at 08:30 AEST on 25 June 2025 *Figure 7*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

COMMENTS

Atmospheric dispersion modelling at this time shows plume direction to the south-east of the site. The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

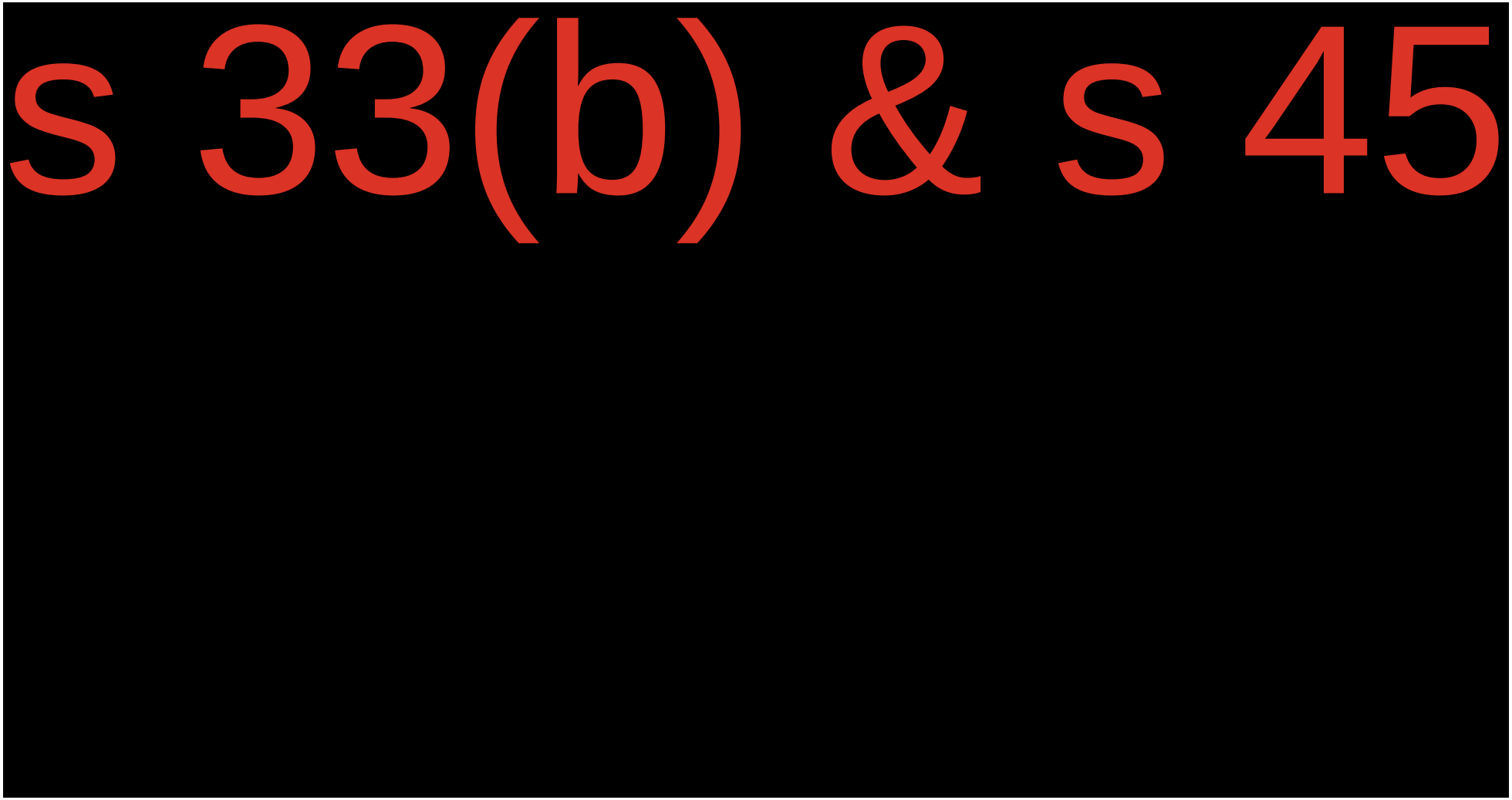


Figure 8 s 33(b) & s 45

NOTE- IRMIS data was not available for download on 25 June 2025 from 08:00 – 10:00 AEST. The detector network is still functional and the IAEA has stated that no off-site increase in radiation levels have been detected as a result of strikes on nuclear facilities.

International Radiation Monitoring Information System (IRMIS)

This network is designed to provide near real-time information and can be used to inform urgent protective actions.

A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

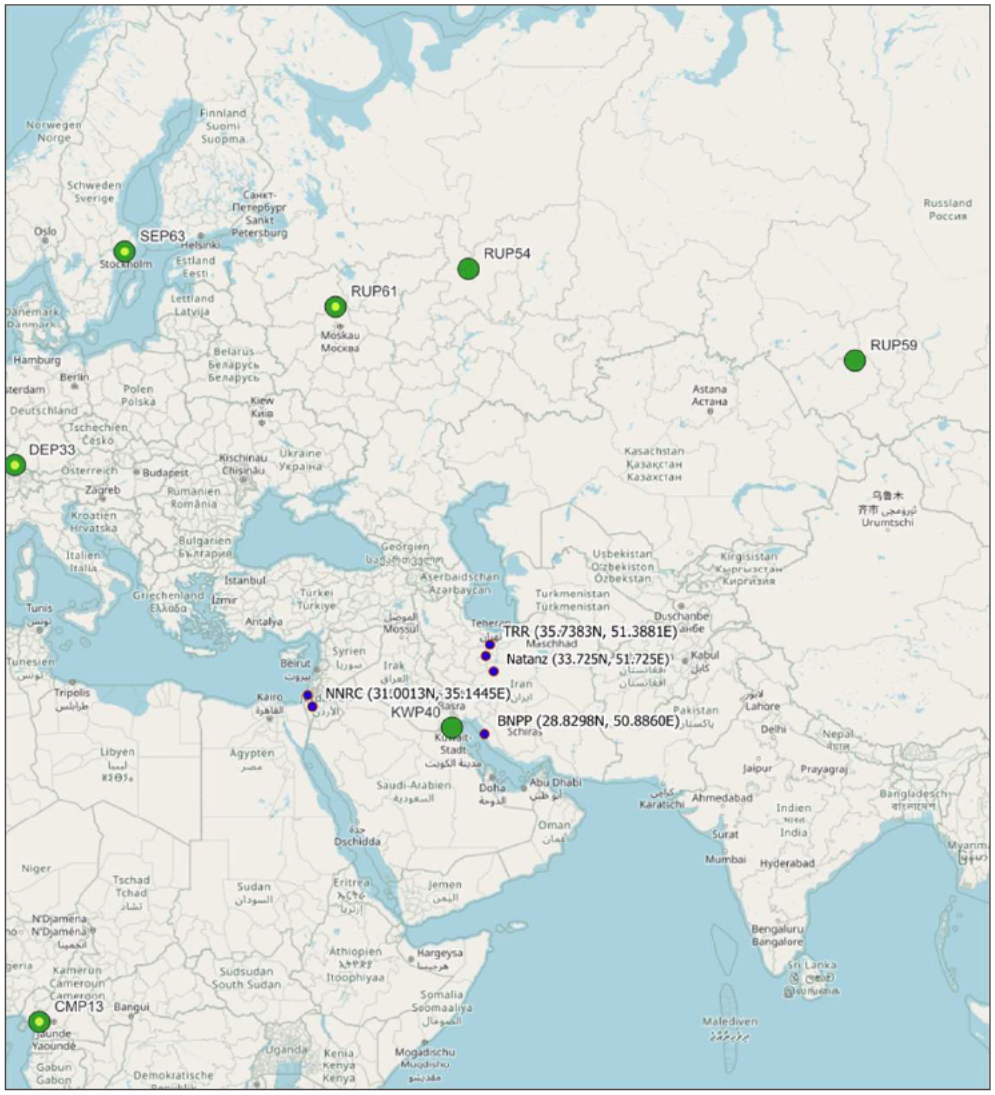


Figure 9 Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System (IMS) radionuclide detection network

International Monitoring System (IMS)

The International Monitoring System is a comprehensive global network of detectors that includes seismic, hydroacoustic, infrasound and radionuclide stations. This network is managed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and is designed to detect clandestine nuclear explosions. The IMS is more sensitive than the IRMIS network and provides different information.

The radionuclide stations in the network can detect very low levels of radiation in the atmosphere. The closest radionuclide station in the region is located in Kuwait City, with other relevant stations in Switzerland, Russia, China, Mongolia, and the British Indian Ocean Territory.

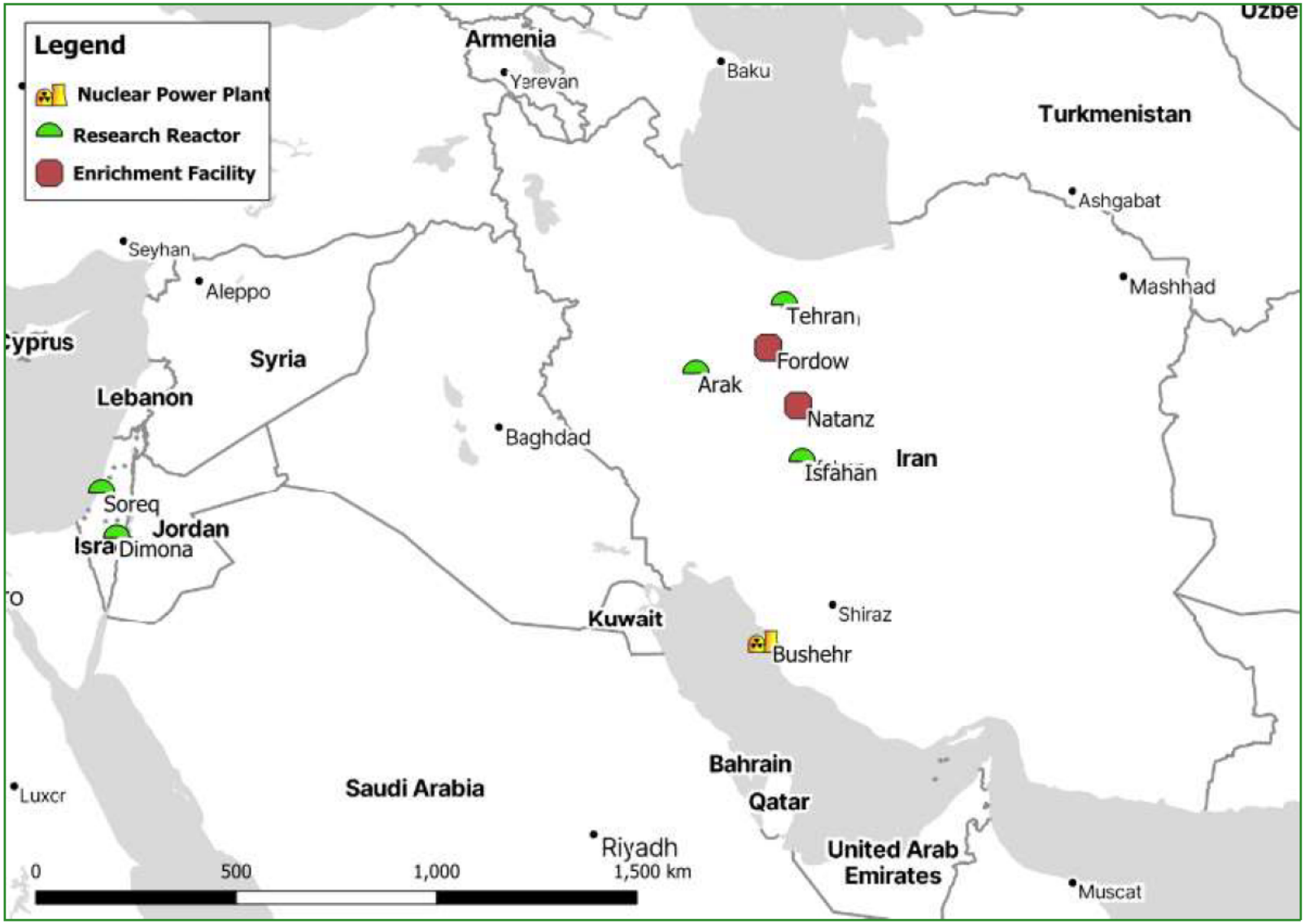
The system is highly effective, having detected all six of North Korea's declared nuclear tests between 2006 and 2017. The network also provided valuable information during the Fukushima nuclear accident, with measurements from stations in Japan helping to identify and quantify the amount of radioactive material that reached certain locations.

There have been no recent detections on this network that would indicate a significant release from a nuclear facility in Iran.

If there was a significant release from a nuclear reactor, it would be detected by the IMS network. However, the measurement process takes several days, so these stations do not provide an early warning system of a nuclear incident or provide real-time measurements to help inform urgent protective actions.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel



Locations of nuclear facilities in Iran and Israel

Figure 9

Released by ARPANSA under FOI

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Document 36

arpansa

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

Israel conducted a series of attacks in Iran between 13 June 2025 and 24 June 2025, including repeated strikes on Iranian nuclear sites at Natanz, Esfahan and Fordow. The United States also conducted military strikes on these facilities on 22 June 2025. A ceasefire between Israel and Iran was announced by the US President on 24 June 2025. No strikes on nuclear facilities in the region have been reported following commencement of the ceasefire.

The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Esfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Modelling indicates that off-site radiological consequences from an incident at these sites are not significant. This agrees with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site at these locations.

Strikes on the Arak heavy water reactor (which was under construction) and centrifuge production facilities in Karaj do not pose a radiological risk. Strikes by Iran on US military sites in Qatar do not pose a radiological risk. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the strikes.

Iran launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. Of these sites, the greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel.

Credible worst-case scenarios for Bushehr, Tehran, Natanz, Esfahan, and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 26 June 2025 10:00 AEST

KEY MESSAGES

- A ceasefire between Israel and Iran was announced by the US president on 24 June 2025. No strikes on nuclear facilities in the region have been reported following commencement of the ceasefire.
- Modelling indicates that off-site radiological consequences from previous strikes at Natanz, Fordow, and Esfahan facilities are not significant. Radiological and chemical contamination is likely present on-site at these locations.
- Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. It is unlikely that any urgent protective actions would be required at the embassy locations.
- In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

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Protective actions that may be required following an incident at the Bushehr Nuclear Power Plant

Should there be a large release of radioactive material from the Bushehr Nuclear Power Plant, radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local Directions: Follow local directions provided with regard to protective actions such as evacuation.

ARPANSA assessment indicates that this protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran

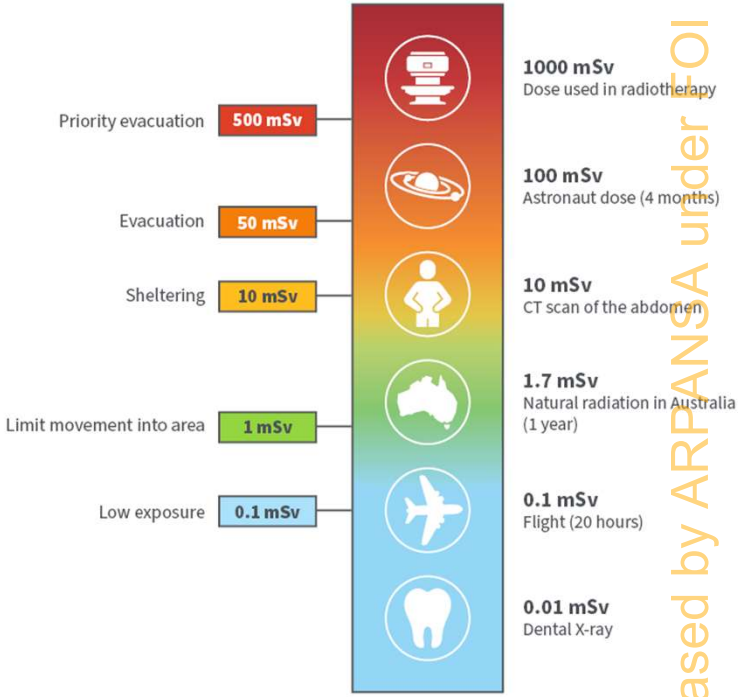


Modelled release at 12:00 AEST 26 June 2025

Model generated at 08:30 AEST on 26 June 2025

Figure 1

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 3000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south-east and east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 10 km from the site
Sheltering and KI Tablets: May be required up to 50km from the site
Food and water restrictions: May be required to several hundred km from the site.

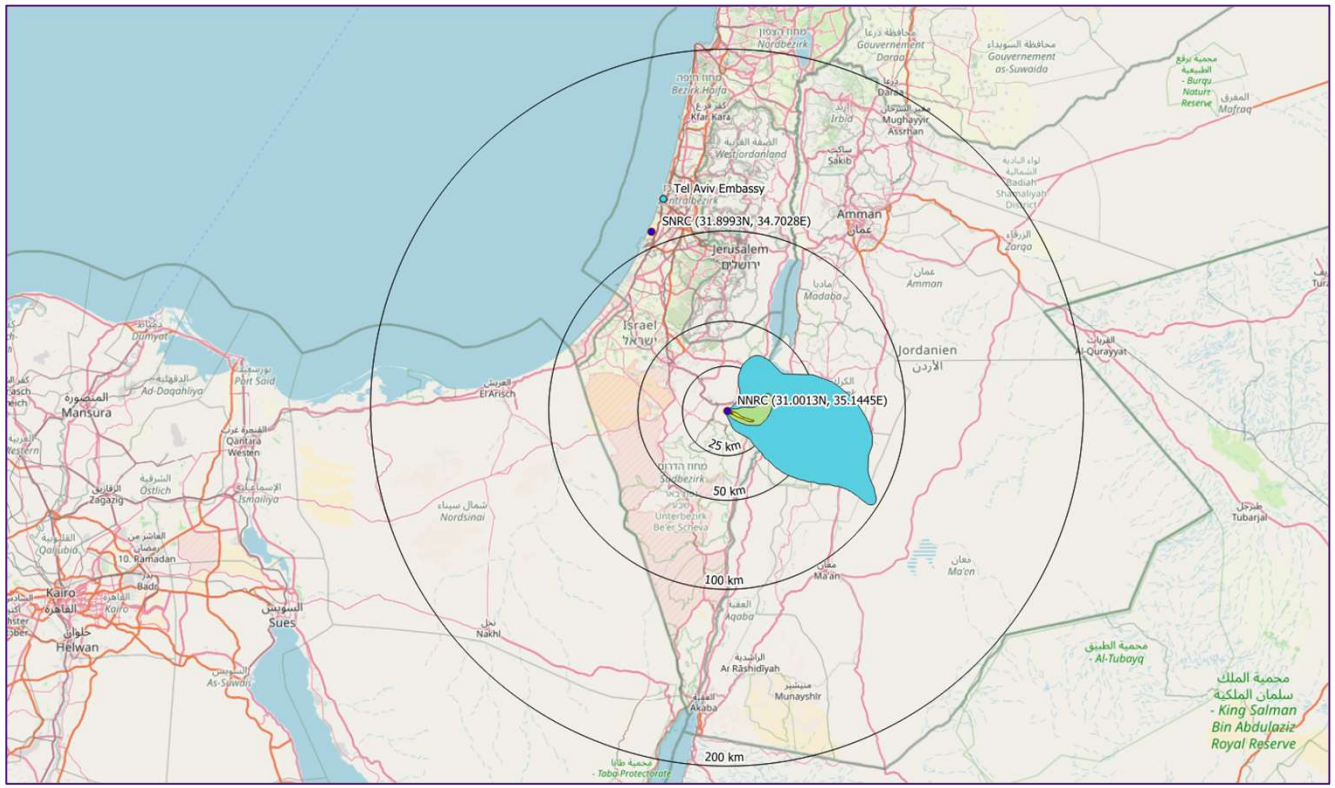
COMMENTS

Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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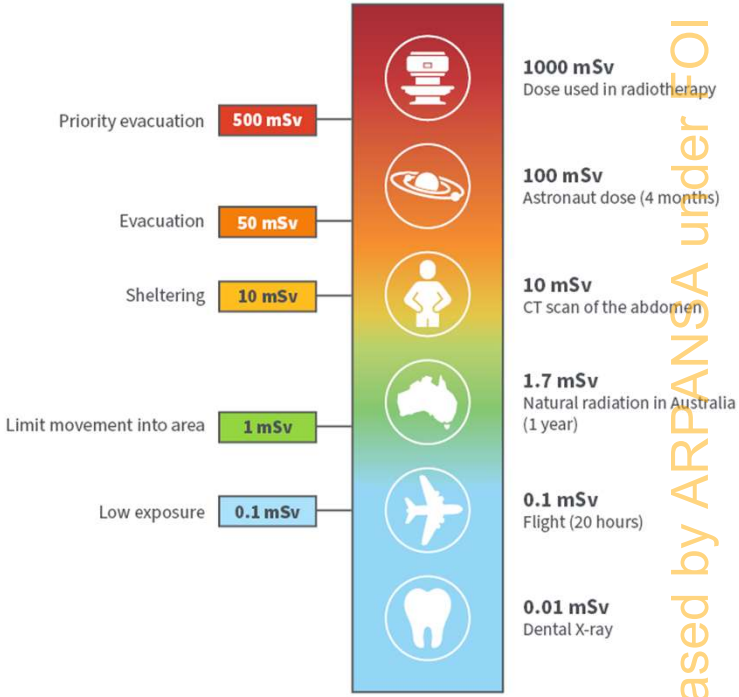
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



Modelled release at 12:00 AEST 26 June 2025 Model generated at 08:30 AEST on 26 June 2025 *Figure 2*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 150 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east and south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 20 km from the site
Food and water restrictions: May be required up to 100 km.

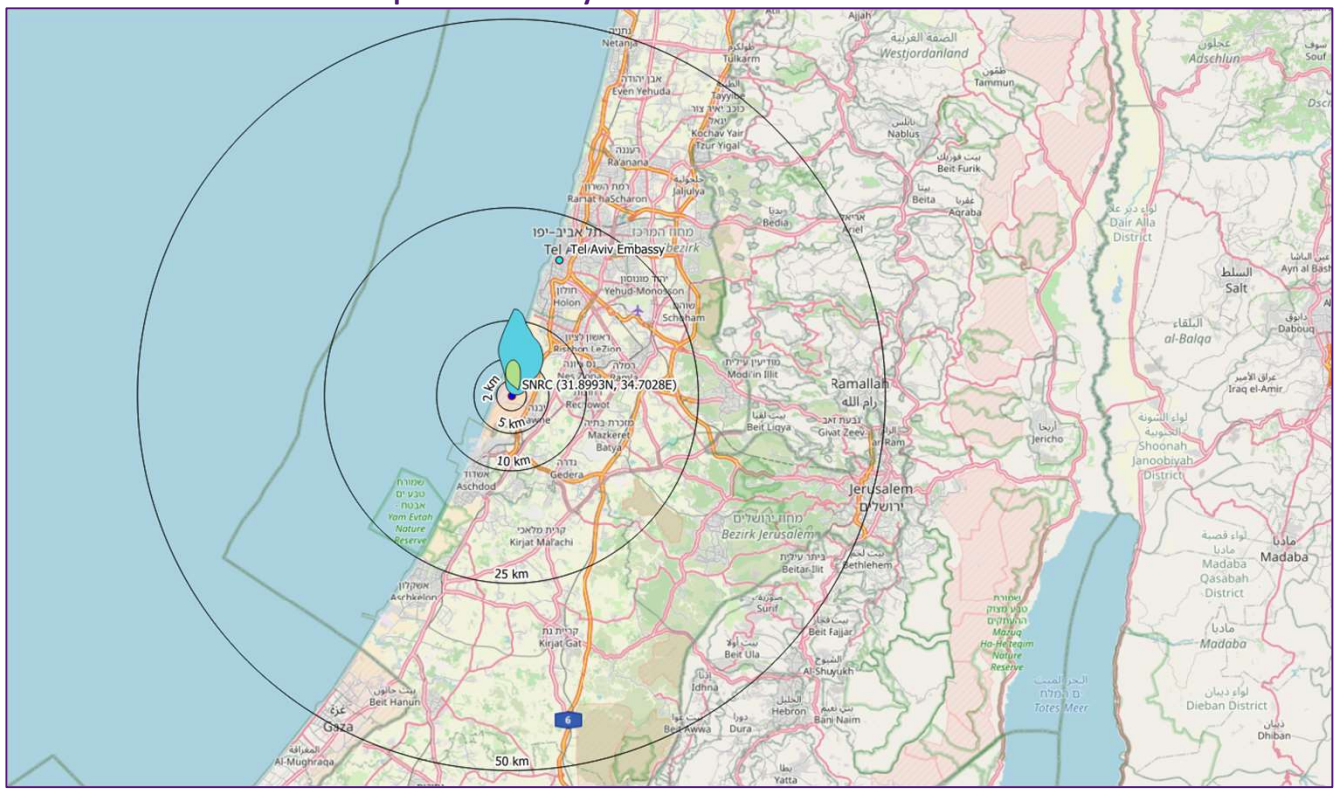
COMMENTS

Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Negev facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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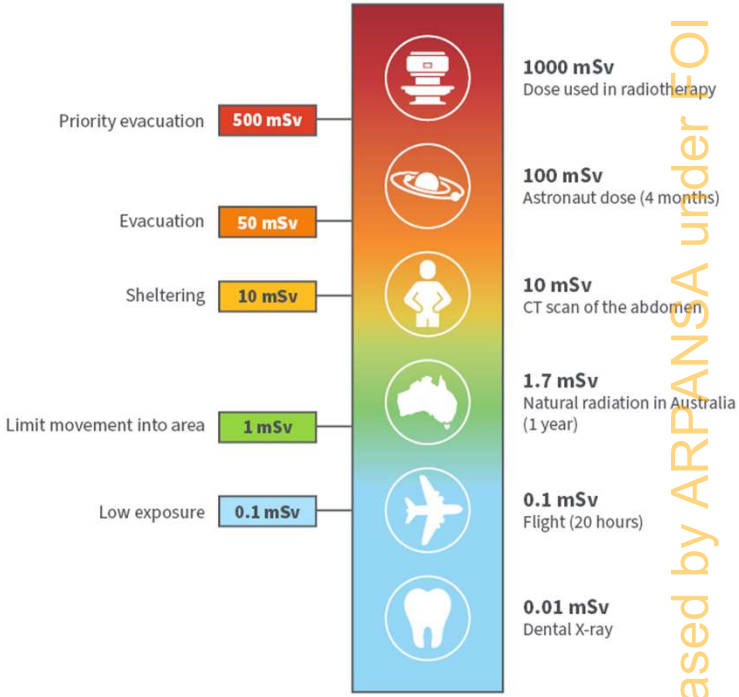
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



Modelled release at 12:00 AEST 26 June 2025 Model generated at 08:30 AEST on 26 June 2025 *Figure 3*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

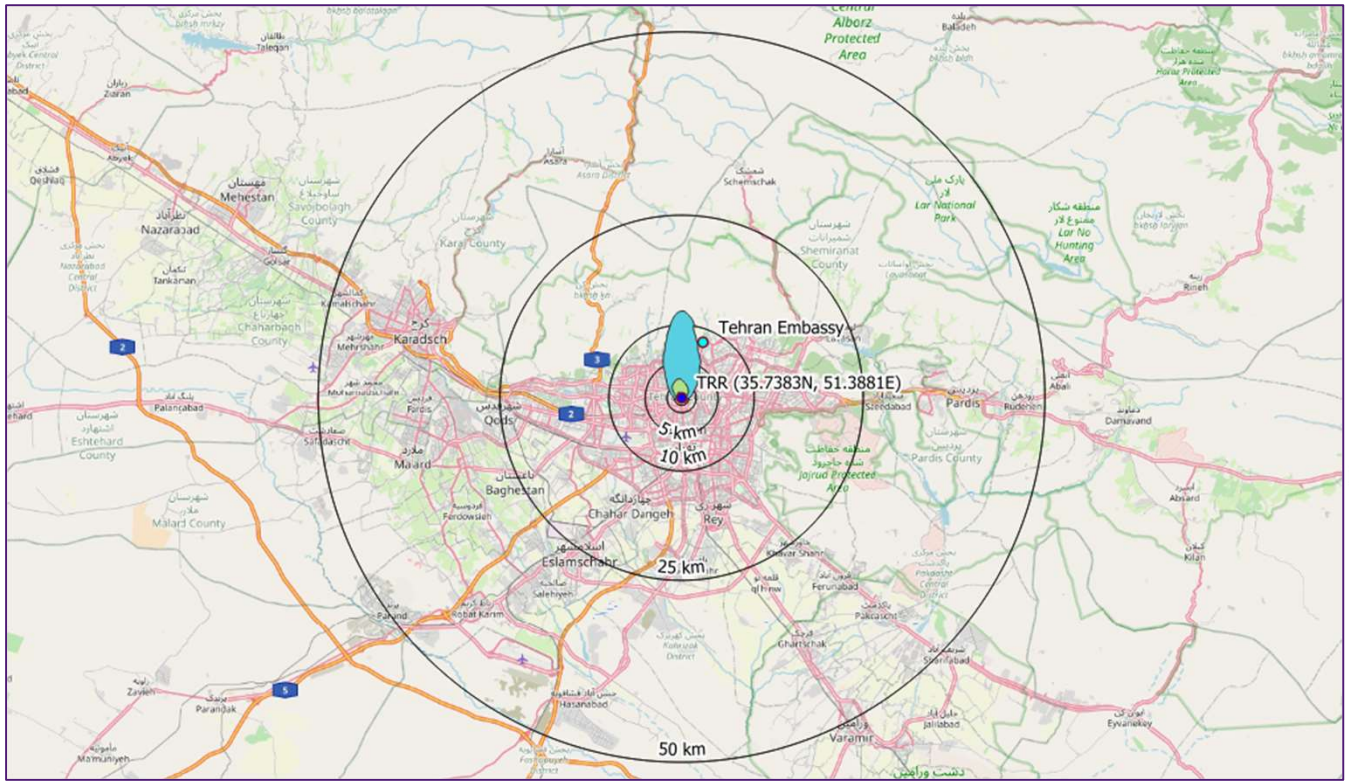
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Soreq facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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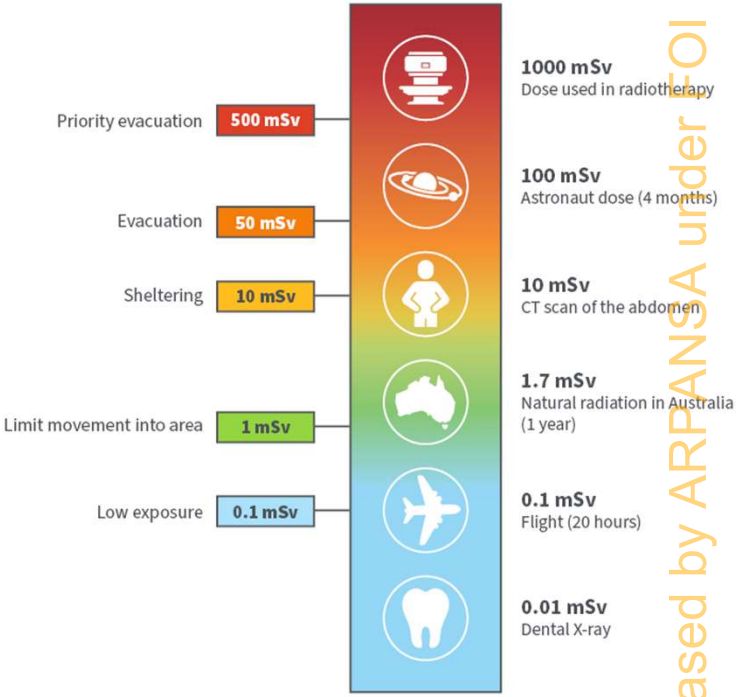
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



Modelled release at 12:00 AEST 26 June 2025 Model generated at 08:30 AEST on 26 June 2025 *Figure 4*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Within several km of the site
Food and water restrictions: May be required up to 10 km from the site.

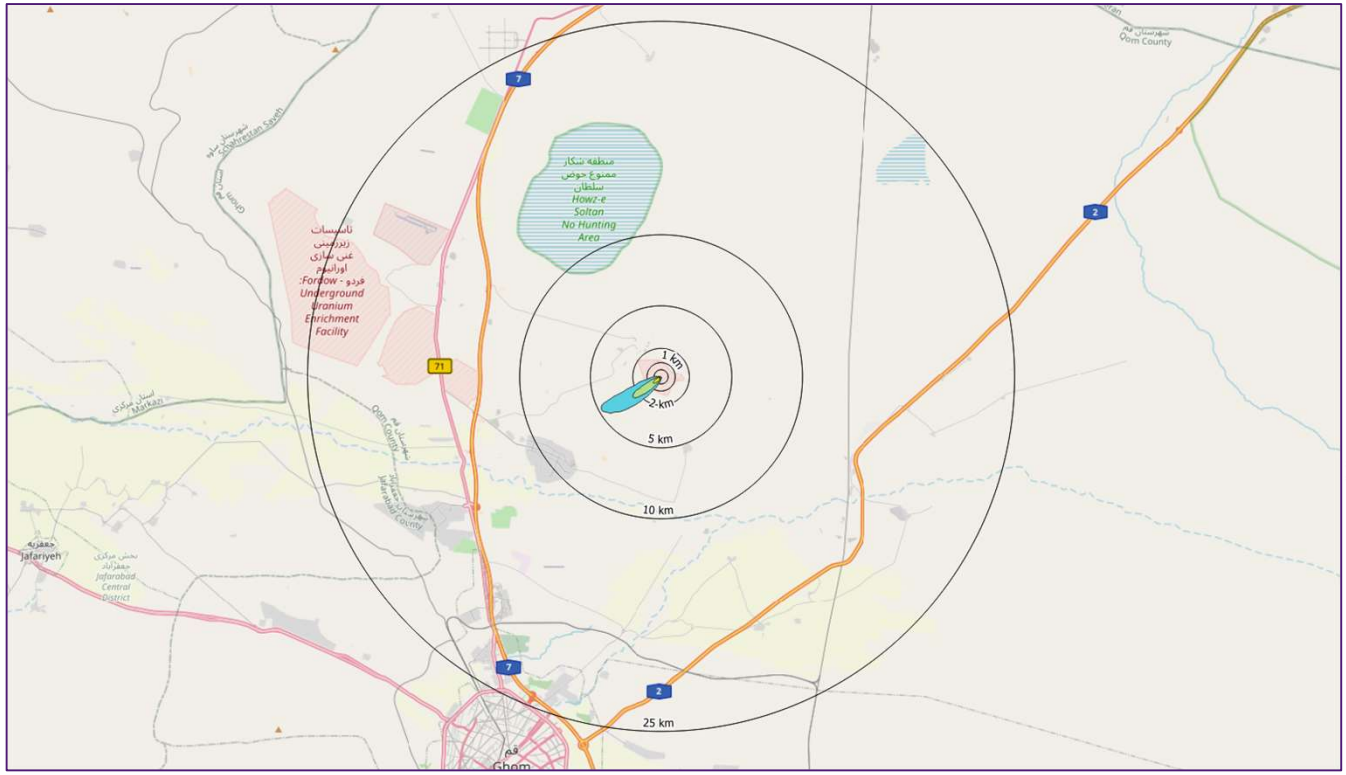
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tehran is very low due to the distance from the Tehran facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at this embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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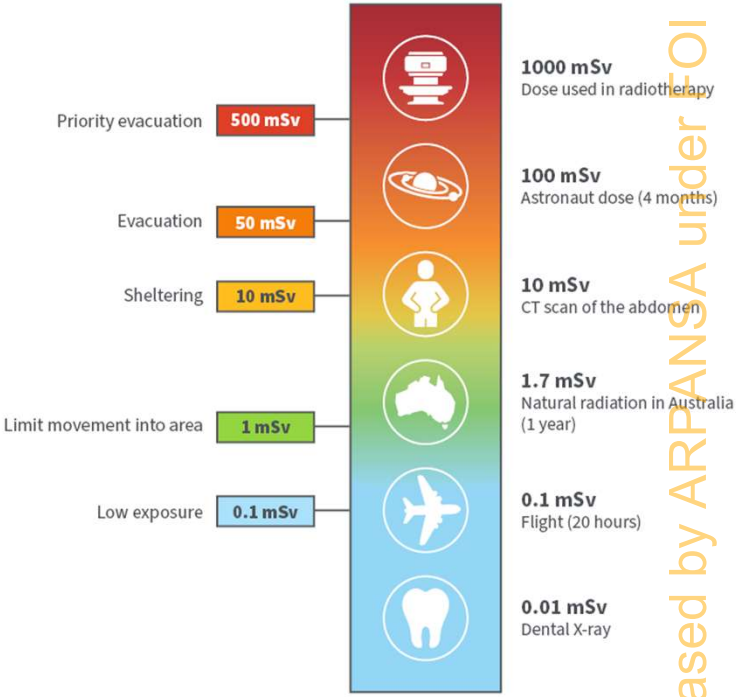
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran



Modelled release at 12:00 AEST 26 June 2025 Model generated at 08:30 AEST on 26 June 2025 *Figure 5*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south-west of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

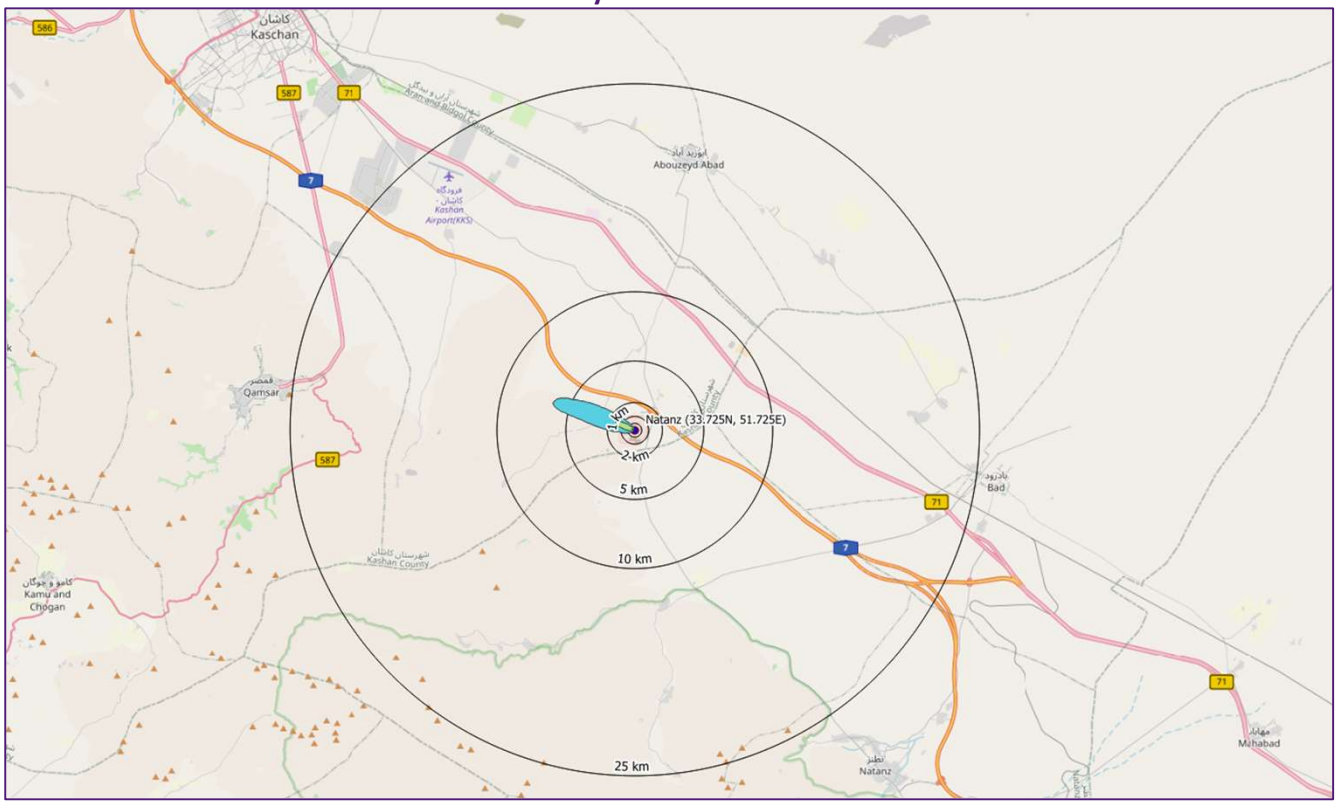
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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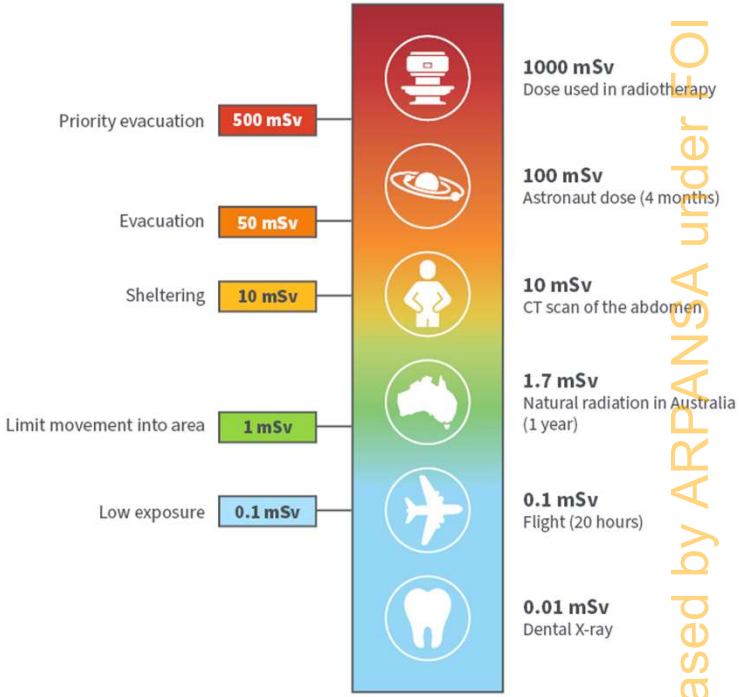
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran



Modelled release at 12:00 AEST 26 June 2025 Model generated at 08:30 AEST on 26 June 2025 *Figure 6*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the west of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

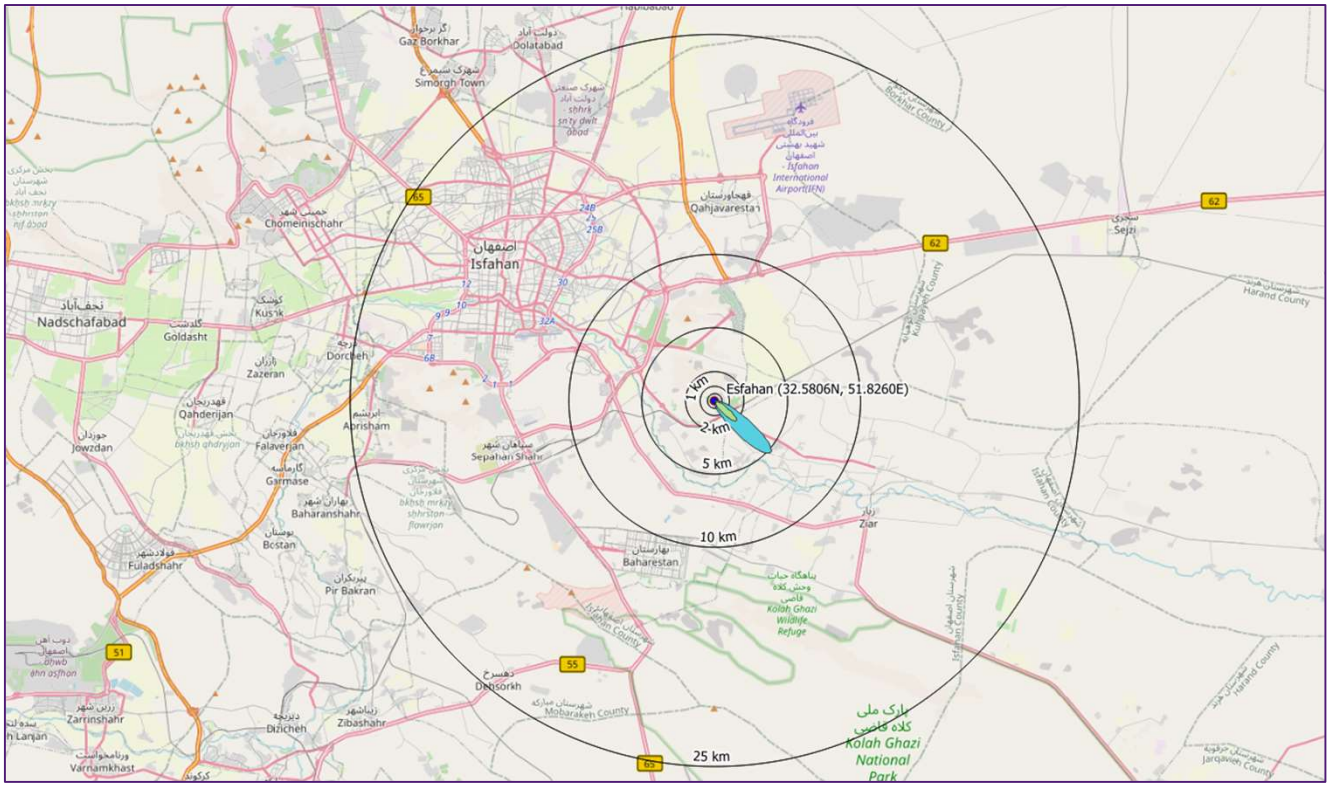
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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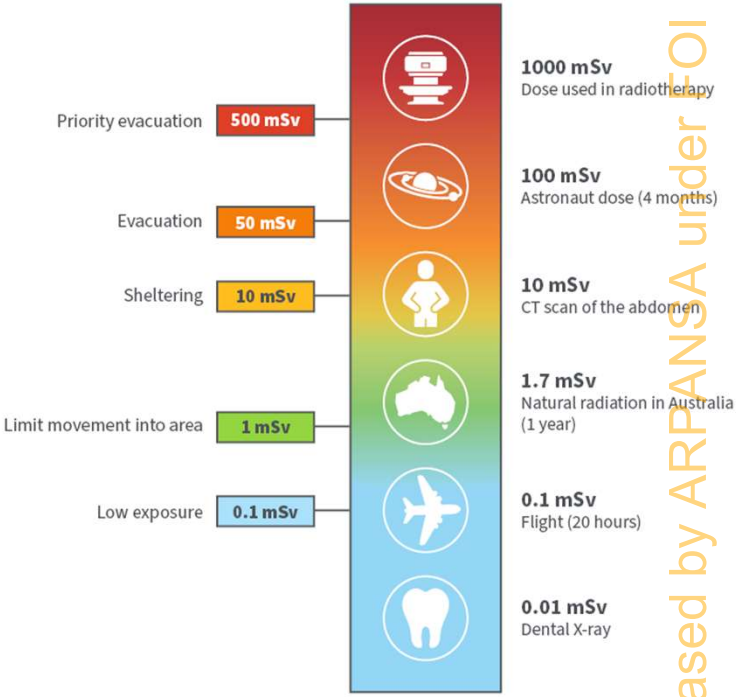
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran



Modelled release at 12:00 AEST 26 June 2025 Model generated at 08:30 AEST on 26 June 2025 *Figure 7*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

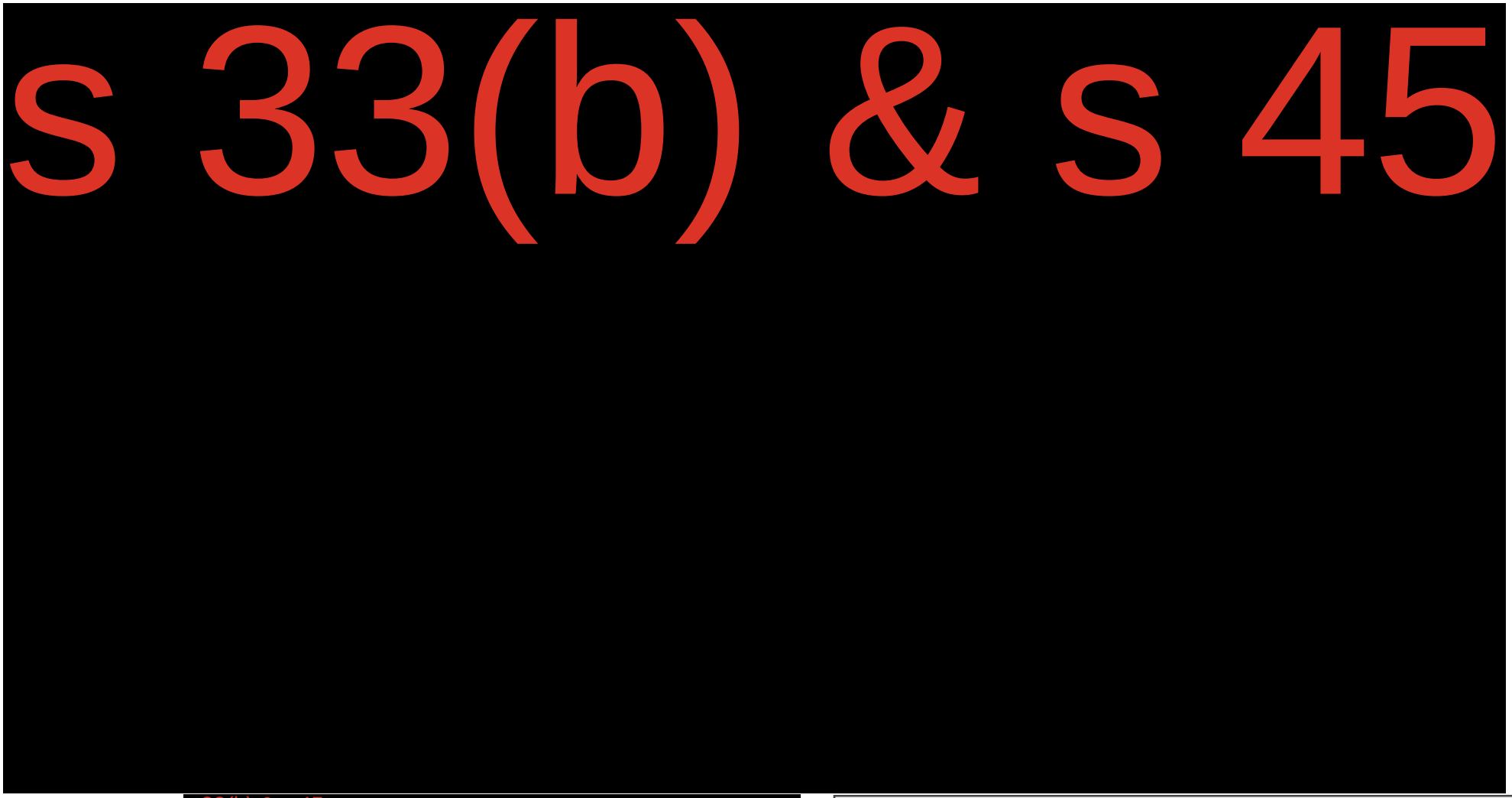


Figure 8 s 33(b) & s 45

IAEA has stated that no off-site increase in radiation levels have been detected as a result of strikes on nuclear facilities in Iran.

International Radiation Monitoring Information System (IRMIS)

This network is designed to provide near real-time information and can be used to inform urgent protective actions.

A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency.

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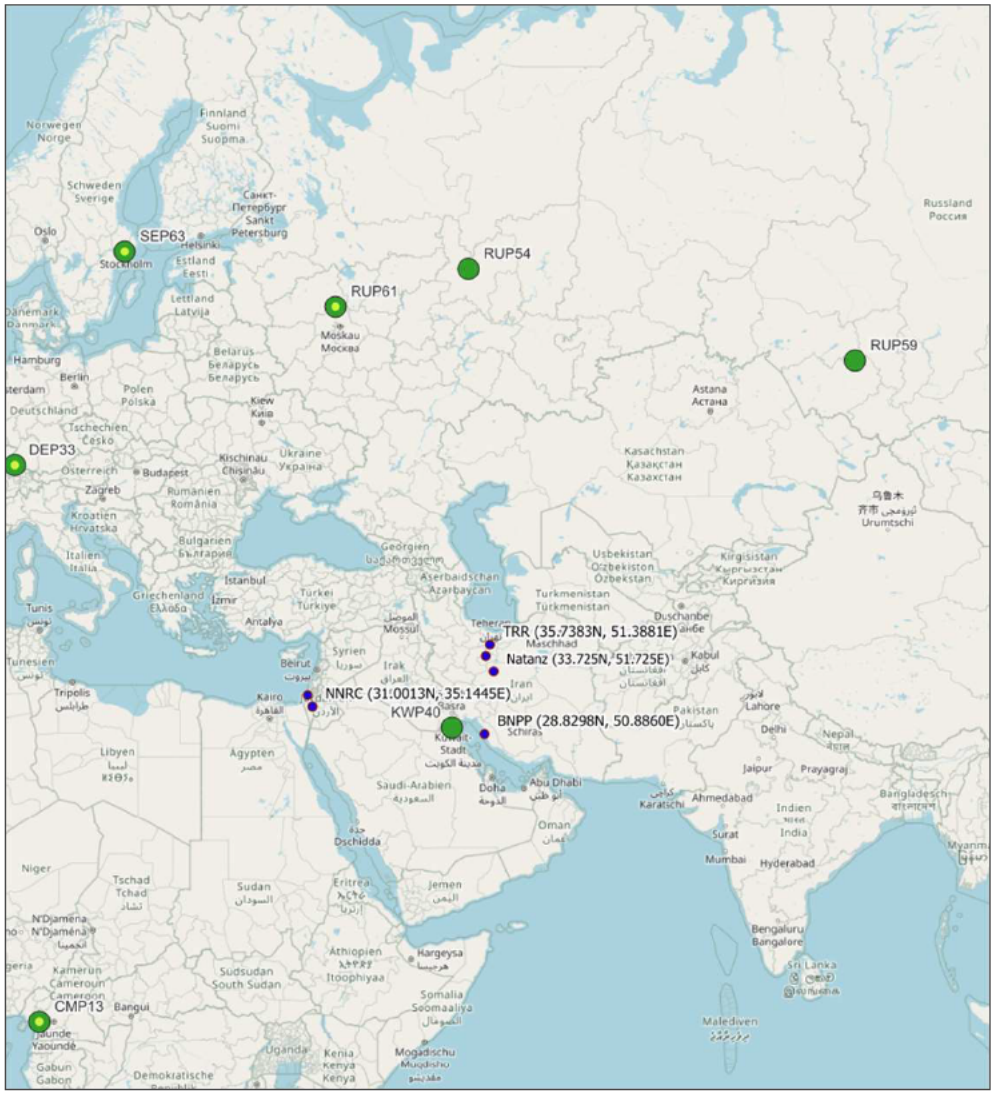


Figure 9 Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System (IMS) radionuclide detection network

International Monitoring System (IMS)

The International Monitoring System is a comprehensive global network of detectors that includes seismic, hydroacoustic, infrasound and radionuclide stations. This network is managed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and is designed to detect clandestine nuclear explosions. The IMS is more sensitive than the IRMIS network and provides different information.

The radionuclide stations in the network can detect very low levels of radiation in the atmosphere. The closest radionuclide station in the region is located in Kuwait City, with other relevant stations in Switzerland, Russia, China, Mongolia, and the British Indian Ocean Territory.

The system is highly effective, having detected all six of North Korea's declared nuclear tests between 2006 and 2017. The network also provided valuable information during the Fukushima nuclear accident, with measurements from stations in Japan helping to identify and quantify the amount of radioactive material that reached certain locations.

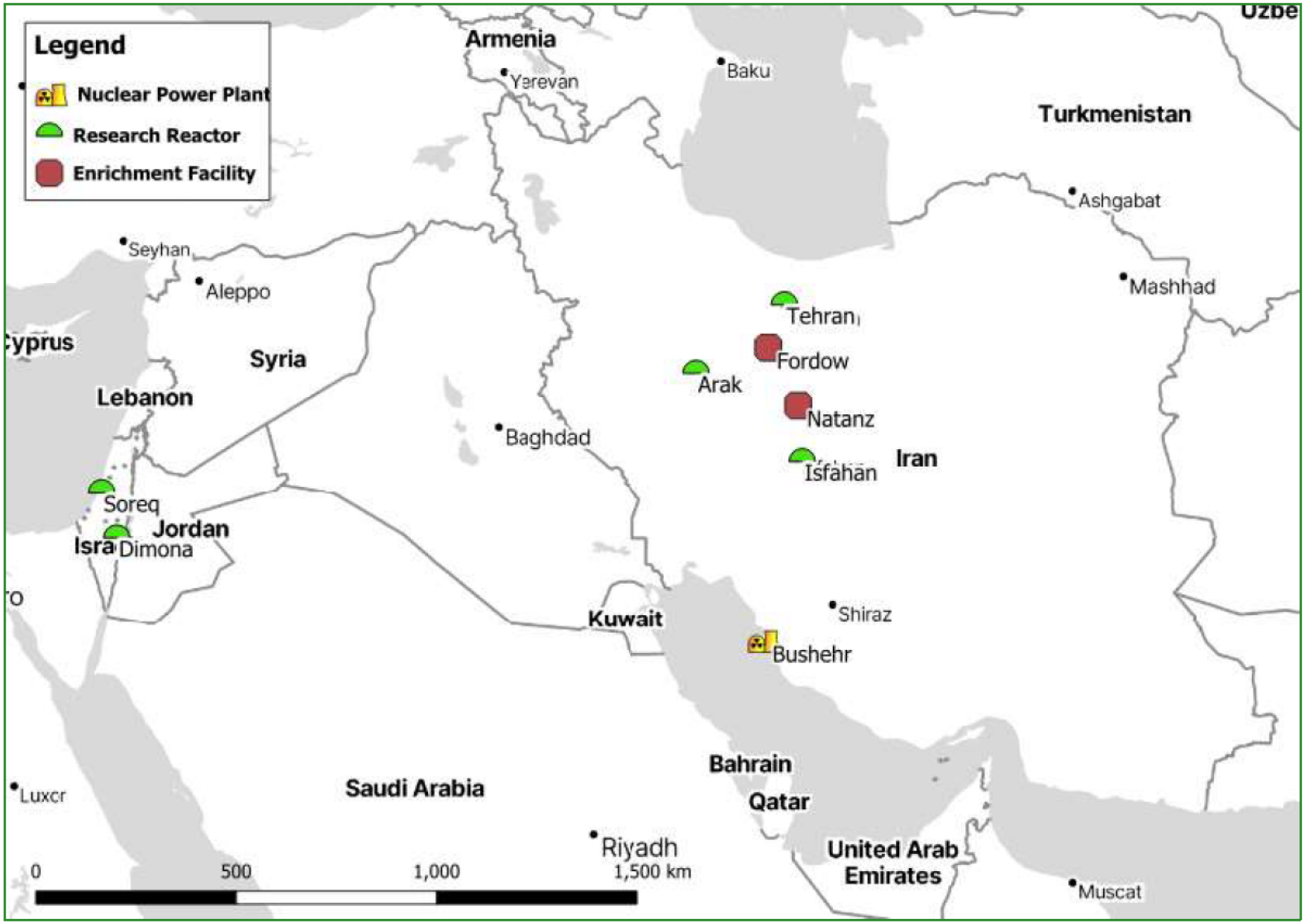
There have been no recent detections on this network that would indicate a significant release from a nuclear facility in Iran.

If there was a significant release from a nuclear reactor, it would be detected by the IMS network. However, the measurement process takes several days, so these stations do not provide an early warning system of a nuclear incident or provide real-time measurements to help inform urgent protective actions.

ARPANSA acknowledges ASNO as the National Authority under Article 3 of the CTBT for the release of IMS data.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel



Locations of nuclear facilities in Iran and Israel

Figure 10

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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Document 37

arpansa

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

On 24 June, a ceasefire came into effect between Israel and Iran. No strikes on nuclear facilities in the region have been reported following commencement of the ceasefire.

Israel conducted a series of attacks in Iran between 13 June 2025 and 24 June 2025, including repeated strikes on Iranian nuclear sites at Natanz, Esfahan and Fordow. The United States also conducted military strikes on these facilities on 22 June 2025.

The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Esfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Modelling indicates that off-site radiological consequences from an incident at these sites are not significant. This agrees with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site at these locations.

Strikes on the Arak heavy water reactor (which was under construction) and centrifuge production facilities in Karaj do not pose a radiological risk. Strikes by Iran on US military sites in Qatar do not pose a radiological risk. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the strikes.

Iran launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors.

The greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel. Credible worst-case scenarios for Bushehr, Tehran, Natanz, Esfahan, and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 27 June 2025 10:00 AEST

KEY MESSAGES

- A ceasefire between Israel and Iran was announced by the US president on 24 June 2025. No strikes on nuclear facilities in the region have been reported following commencement of the ceasefire.
- Modelling indicates that off-site radiological consequences from previous strikes at Natanz, Fordow, and Esfahan facilities are not significant.
- Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. It is unlikely that any urgent protective actions would be required at the embassy locations.
- In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
- **Note that there will be no Radiation Assessment Report produced for 28 June 2025. The next planned Report will be for 29 June 2025.**

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

ARPANSA DUTY OFFICER

s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a)(ii)

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Protective actions that may be required following an incident at the Bushehr Nuclear Power Plant

Should there be a large release of radioactive material from the Bushehr Nuclear Power Plant, radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local Directions: Follow local directions provided with regard to protective actions such as evacuation.

ARPANSA assessment indicates that this protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

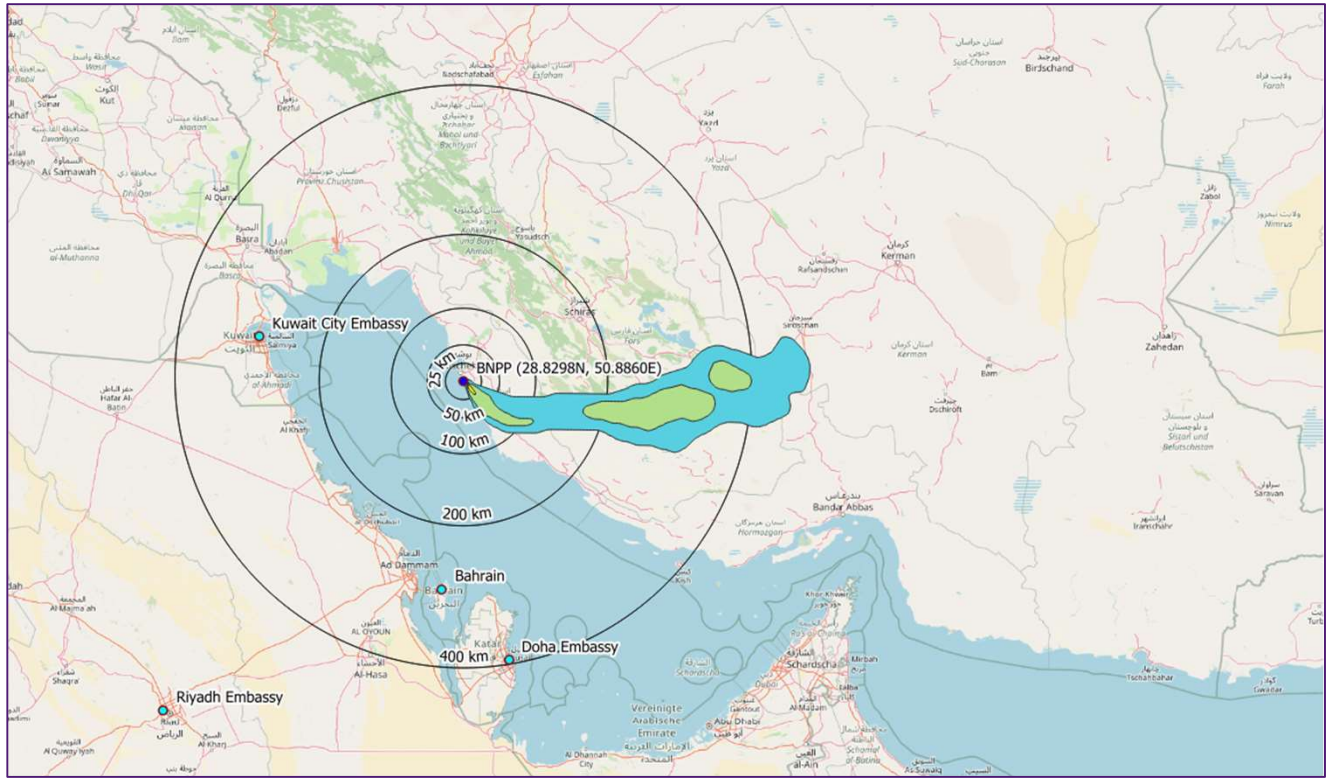
Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran

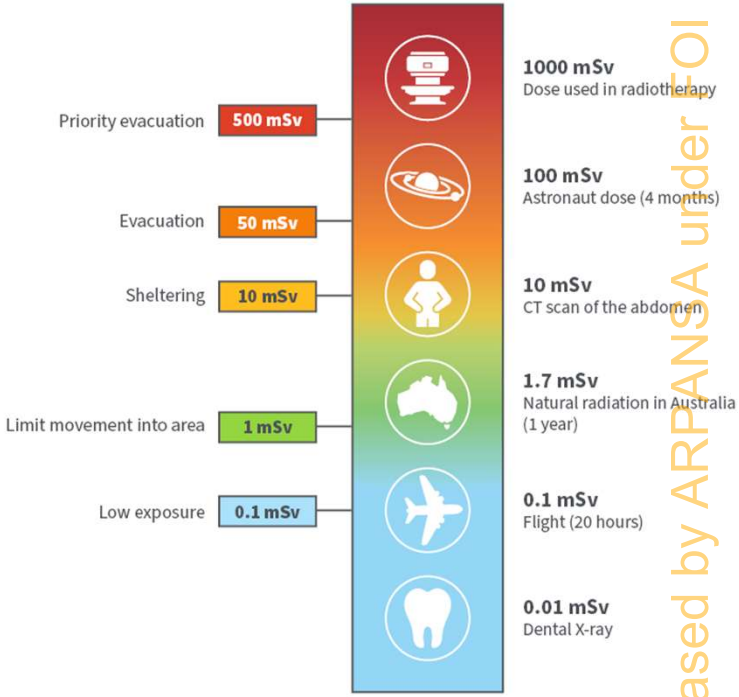


Modelled release at 12:00 AEST 27 June 2025

Model generated at 08:30 AEST on 27 June 2025

Figure 1

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 3000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south-east and east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 10 km from the site
Sheltering and KI Tablets: May be required up to 50km from the site
Food and water restrictions: May be required to several hundred km from the site.

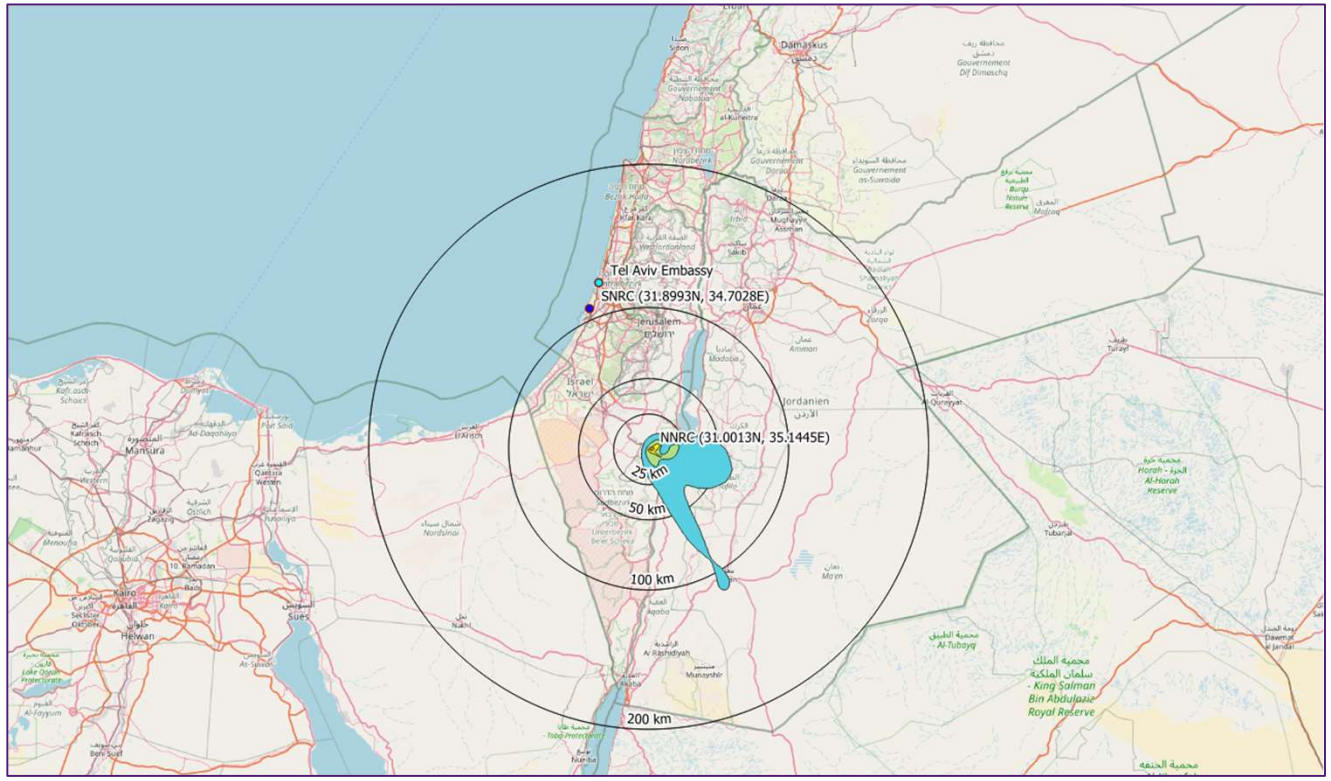
COMMENTS

Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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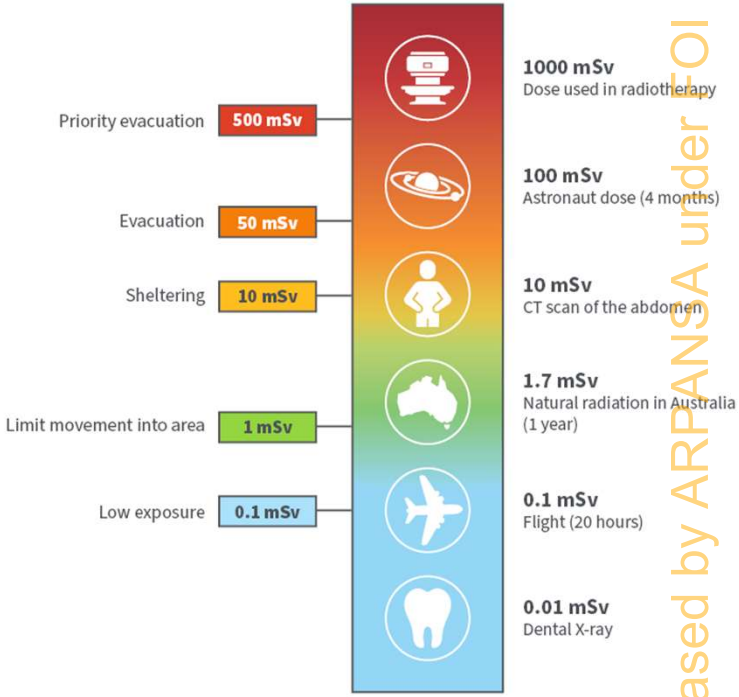
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



Modelled release at 12:00 AEST 27 June 2025 Model generated at 08:30 AEST on 27 June 2025 *Figure 2*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 150 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east and south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 20 km from the site
Food and water restrictions: May be required up to 100 km.

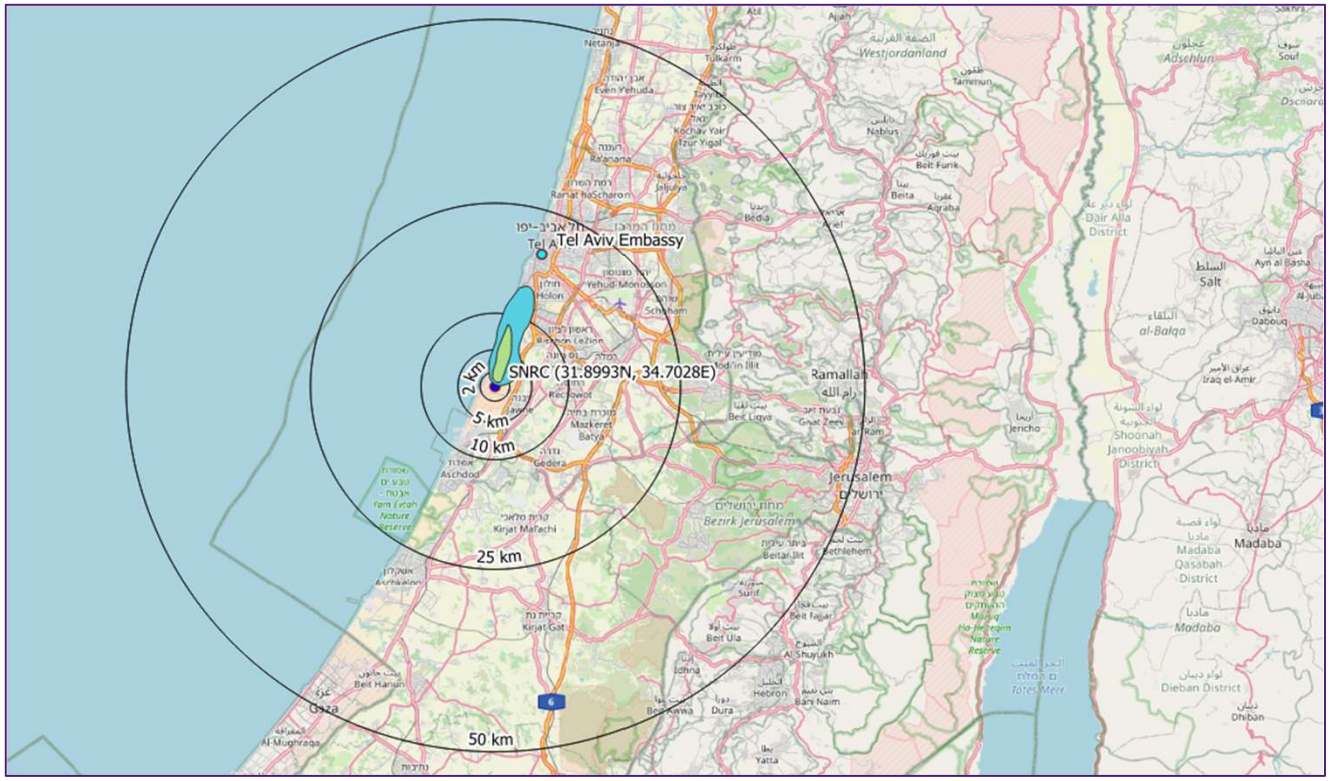
COMMENTS

Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Negev facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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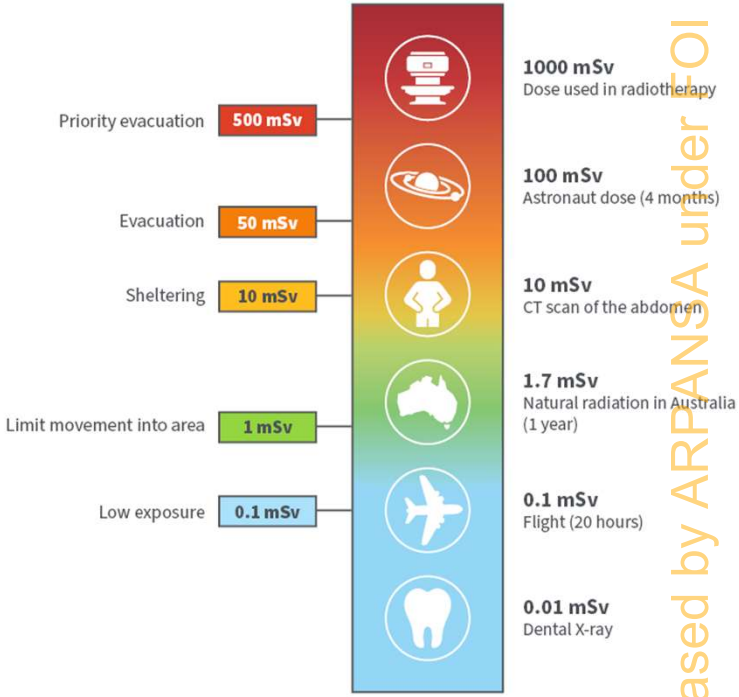
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



Modelled release at 12:00 AEST 27 June 2025 Model generated at 08:30 AEST on 27 June 2025 *Figure 3*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

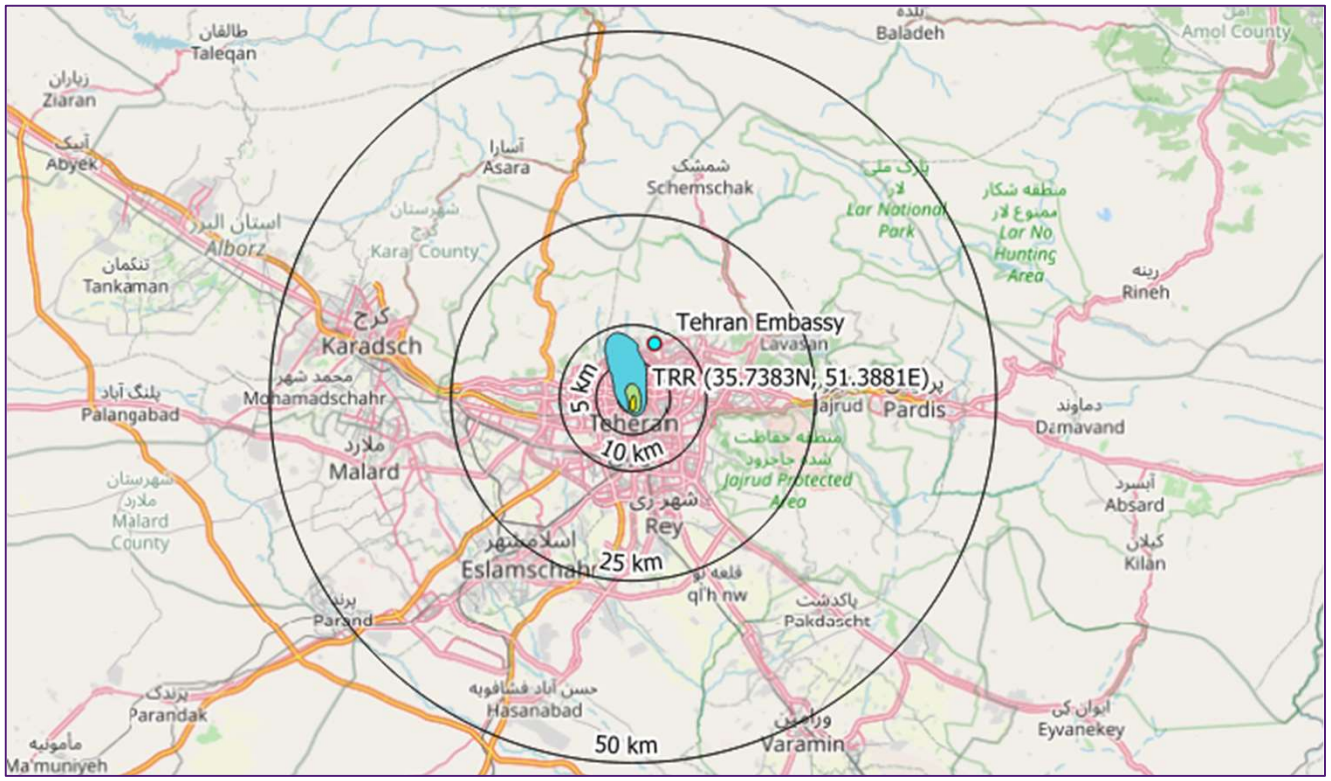
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Soreq facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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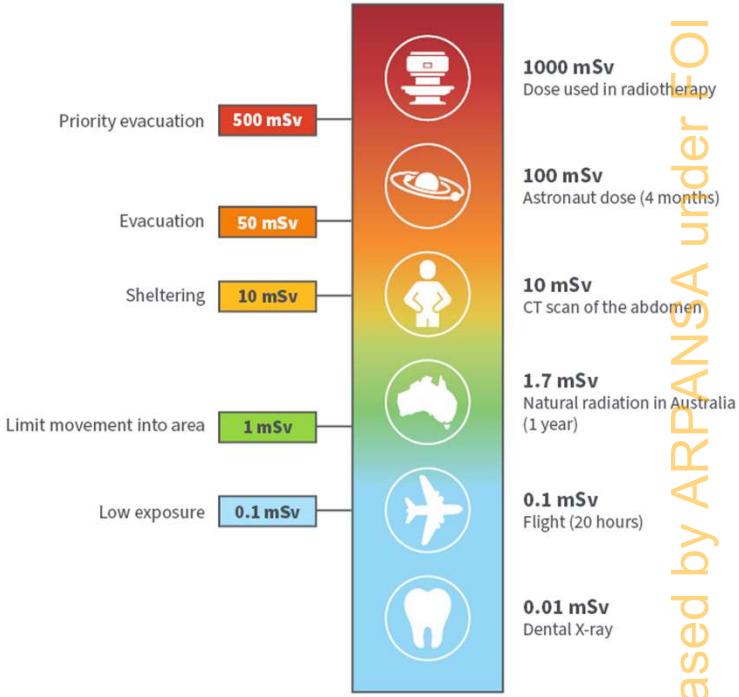
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



Modelled release at 12:00 AEST 27 June 2025 Model generated at 08:30 AEST on 27 June 2025 *Figure 4*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

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RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north of the site

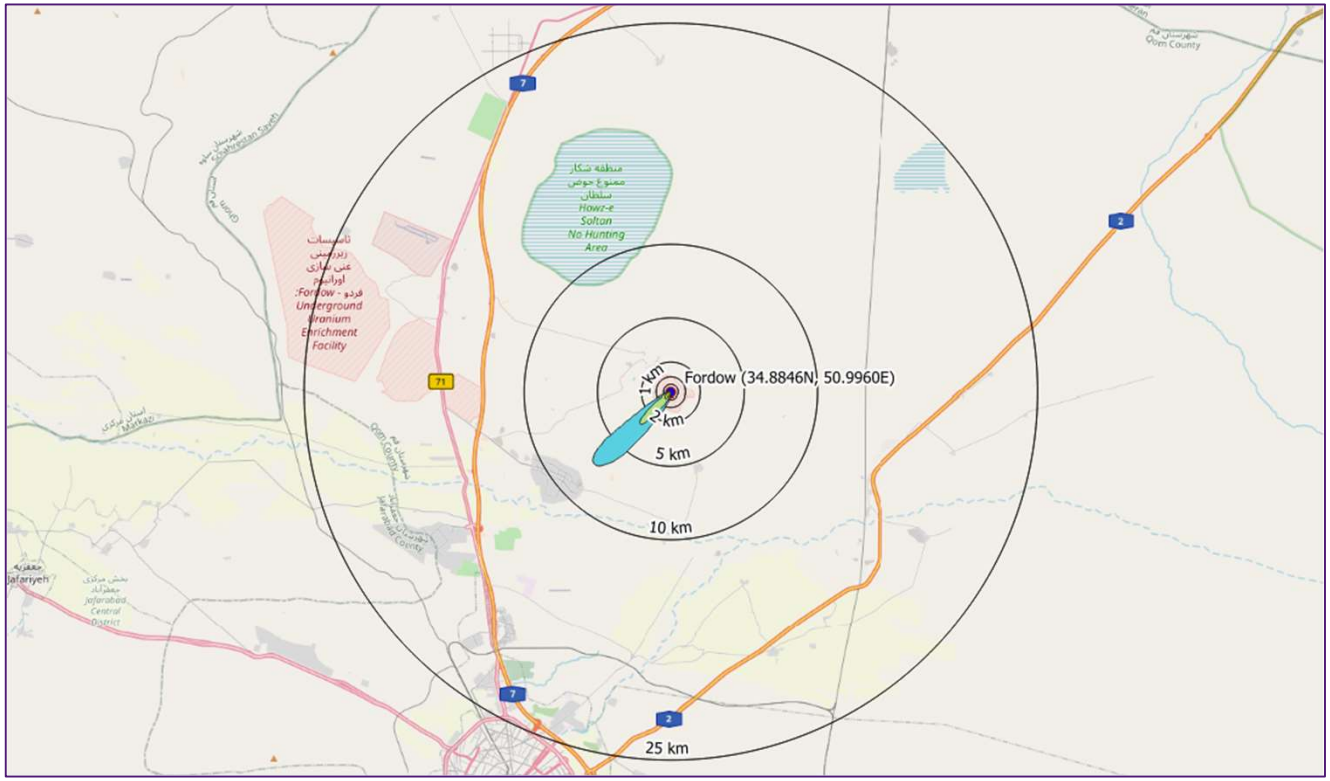
Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Within several km of the site
Food and water restrictions: May be required up to 10 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tehran is very low due to the distance from the Tehran facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at this embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

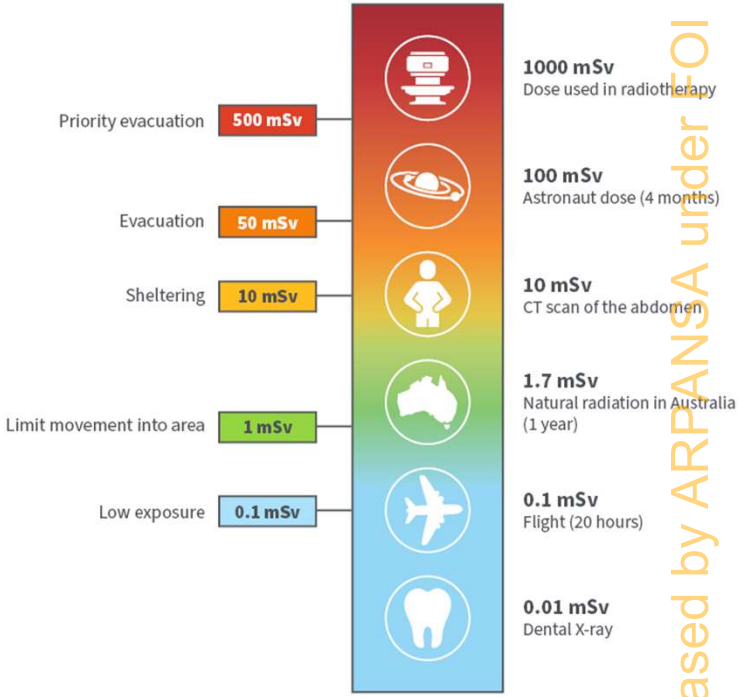
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran



Modelled release at 12:00 AEST 27 June 2025 Model generated at 08:30 AEST on 27 June 2025 *Figure 5*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south-west of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

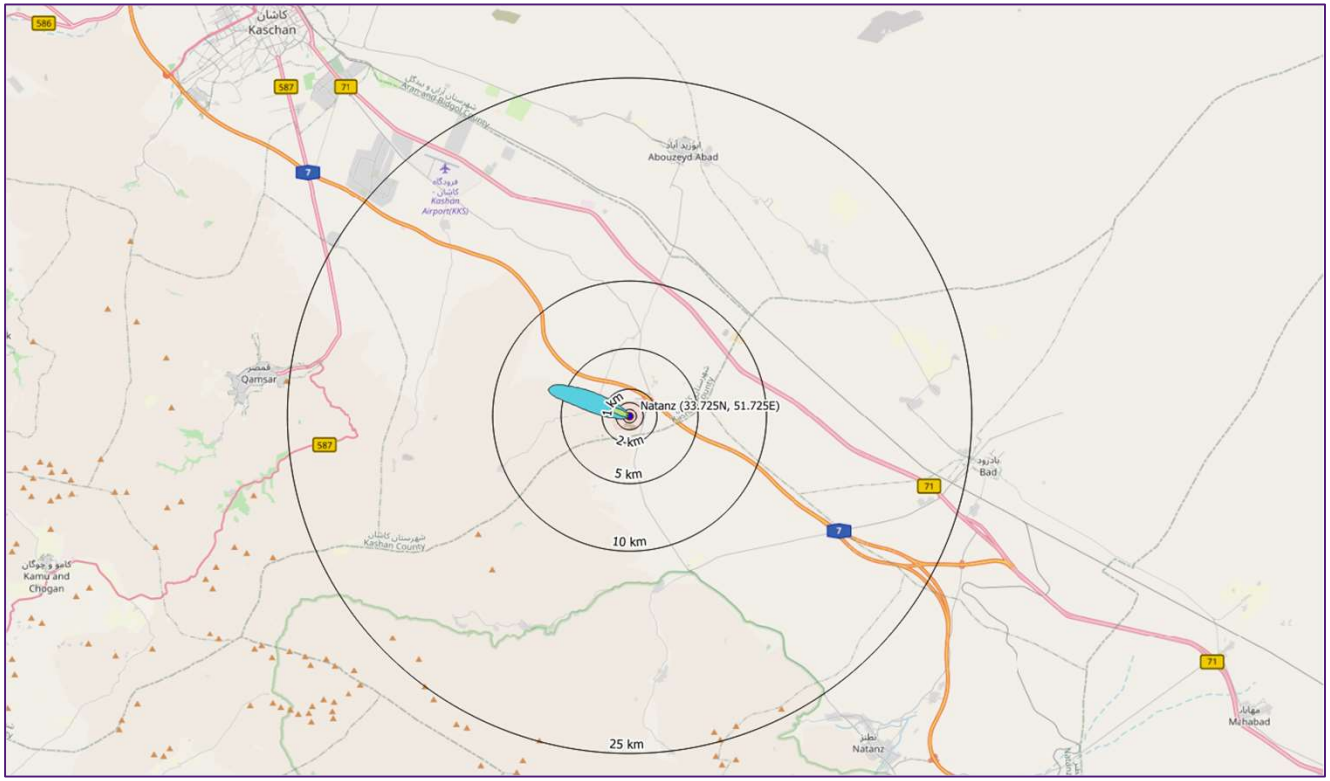
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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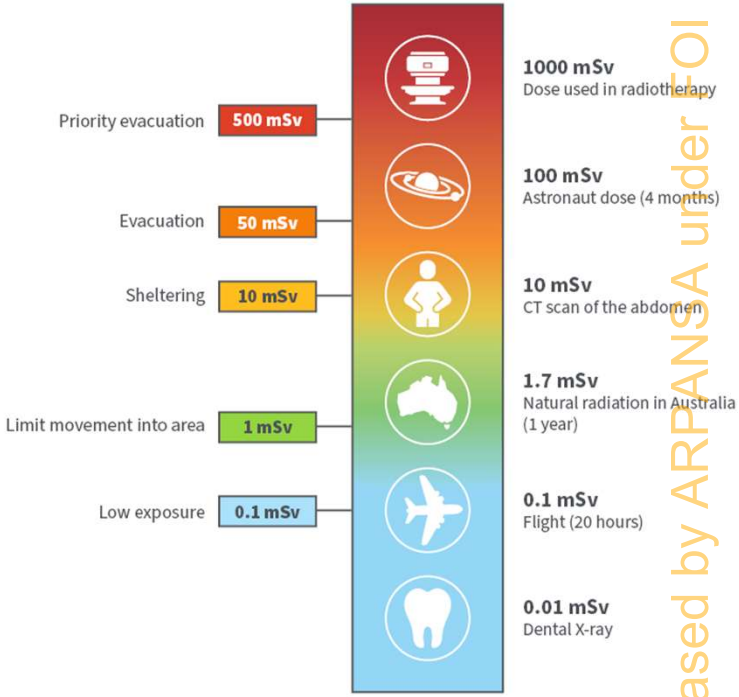
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran



Modelled release at 12:00 AEST 27 June 2025 Model generated at 08:30 AEST on 27 June 2025 *Figure 6*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the west of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

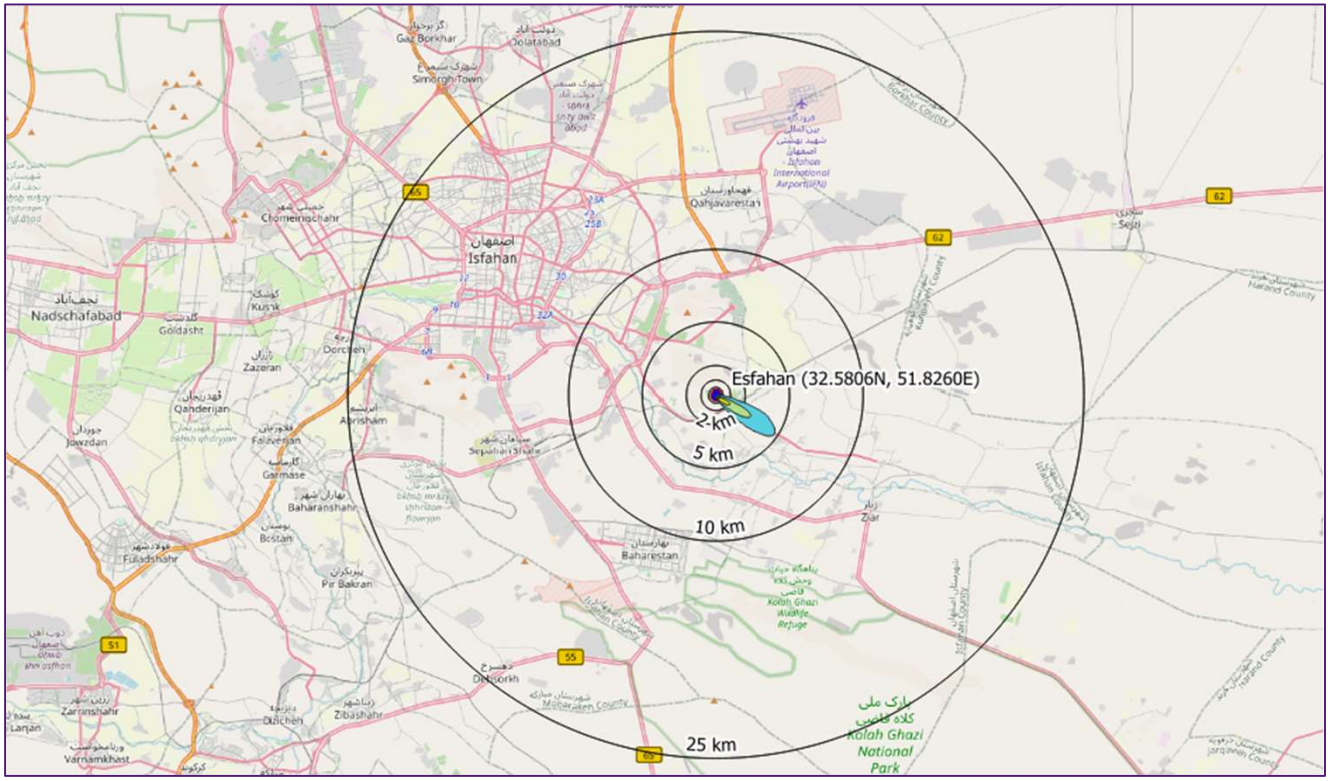
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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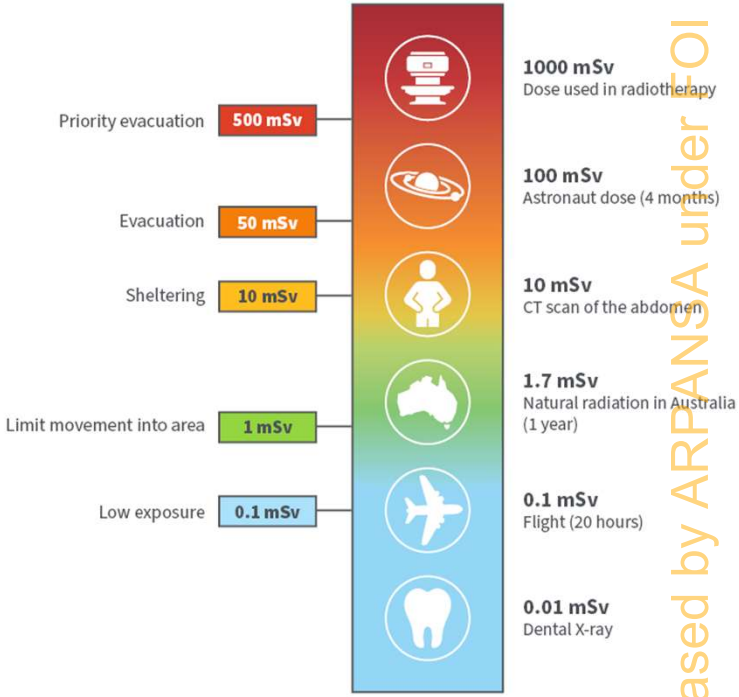
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran



Modelled release at 12:00 AEST 27 June 2025 Model generated at 08:30 AEST on 27 June 2025 *Figure 7*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

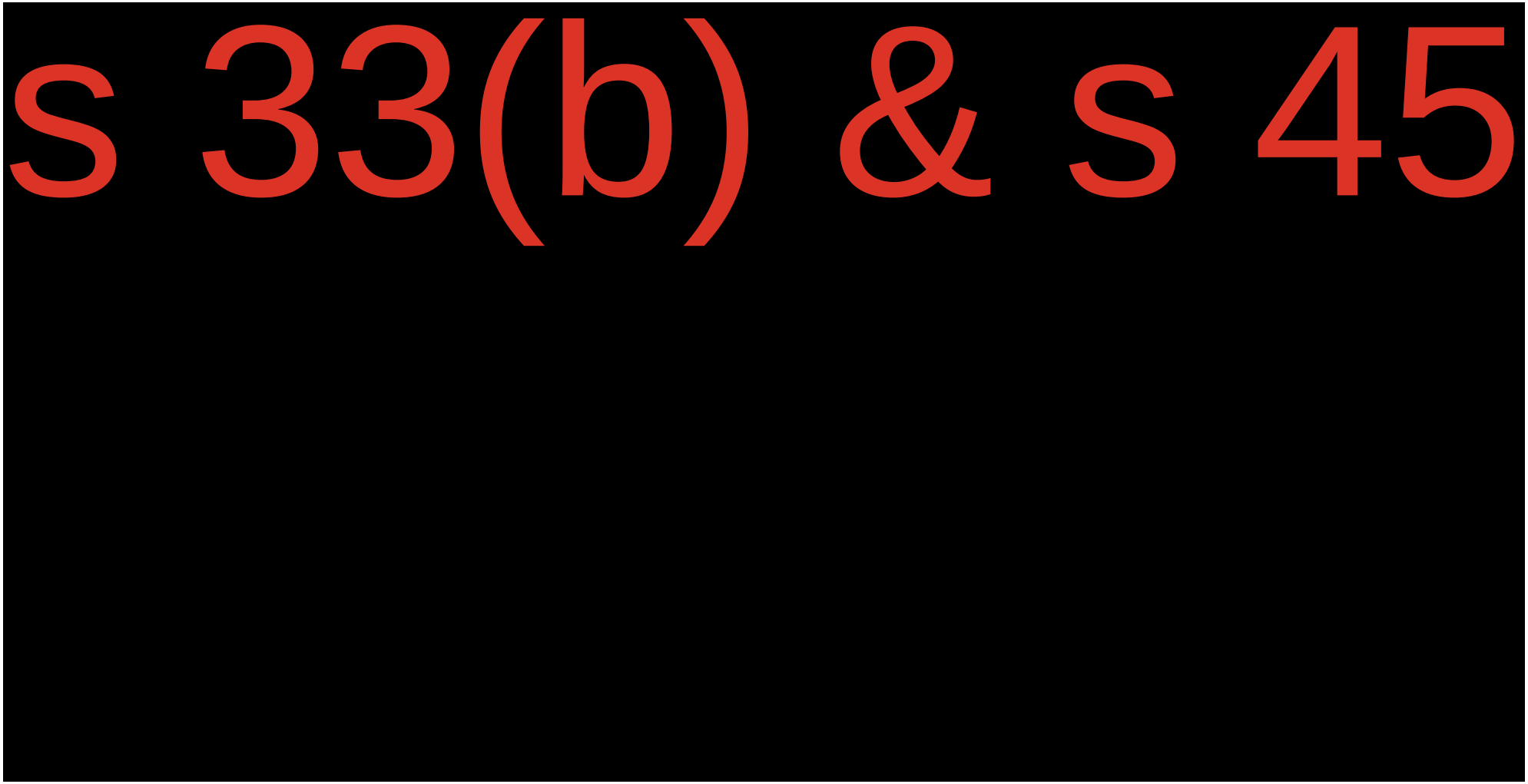


Figure 8 s 33(b) & s 45

IAEA has stated that no off-site increase in radiation levels have been detected as a result of strikes on nuclear facilities in Iran.

International Radiation Monitoring Information System (IRMIS)

This network is designed to provide near real-time information and can be used to inform urgent protective actions.

A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

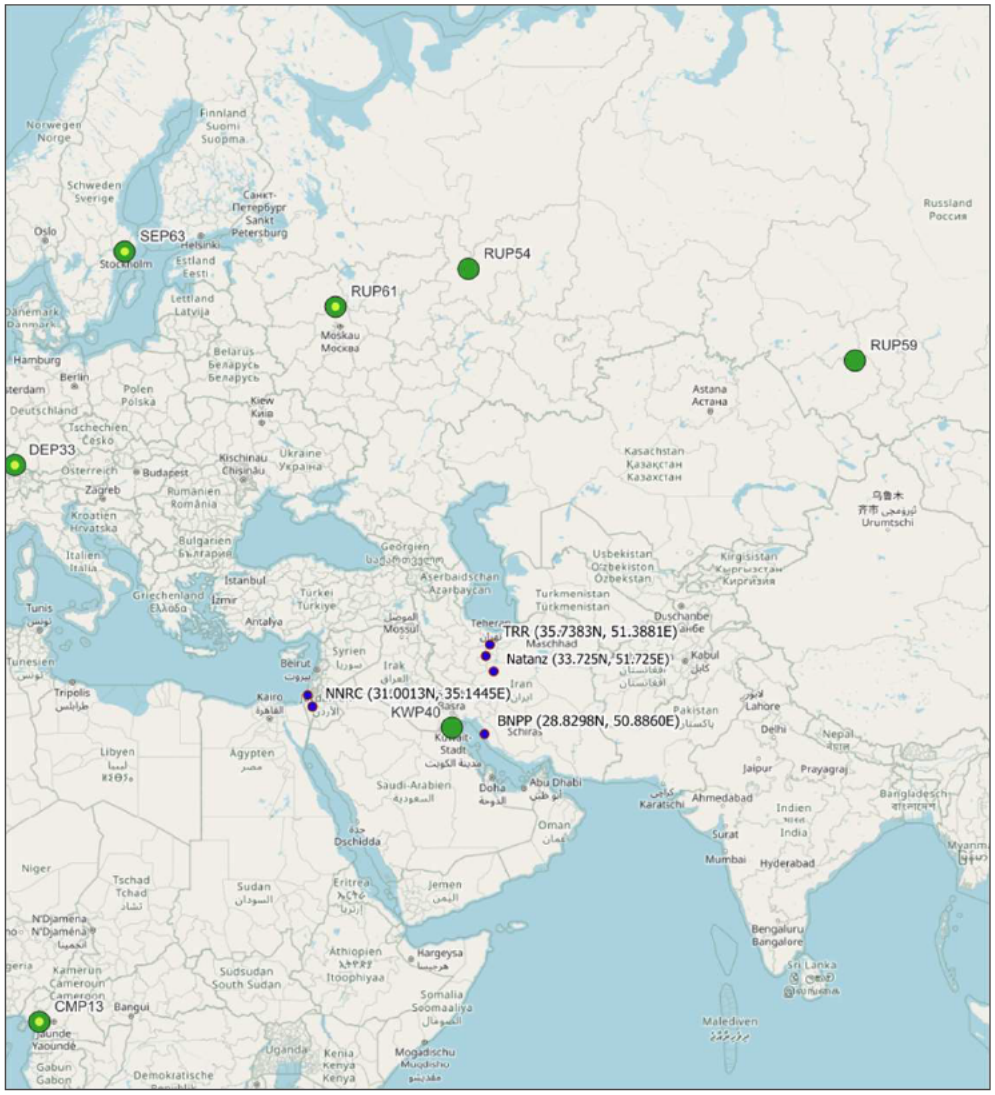


Figure 9 Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System (IMS) radionuclide detection network

International Monitoring System (IMS)

The International Monitoring System is a comprehensive global network of detectors that includes seismic, hydroacoustic, infrasound and radionuclide stations. This network is managed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and is designed to detect clandestine nuclear explosions. The IMS is more sensitive than the IRMIS network and provides different information.

The radionuclide stations in the network can detect very low levels of radiation in the atmosphere. The closest radionuclide station in the region is located in Kuwait City, with other relevant stations in Switzerland, Russia, China, Mongolia, and the British Indian Ocean Territory.

The system is highly effective, having detected all six of North Korea's declared nuclear tests between 2006 and 2017. The network also provided valuable information during the Fukushima nuclear accident, with measurements from stations in Japan helping to identify and quantify the amount of radioactive material that reached certain locations.

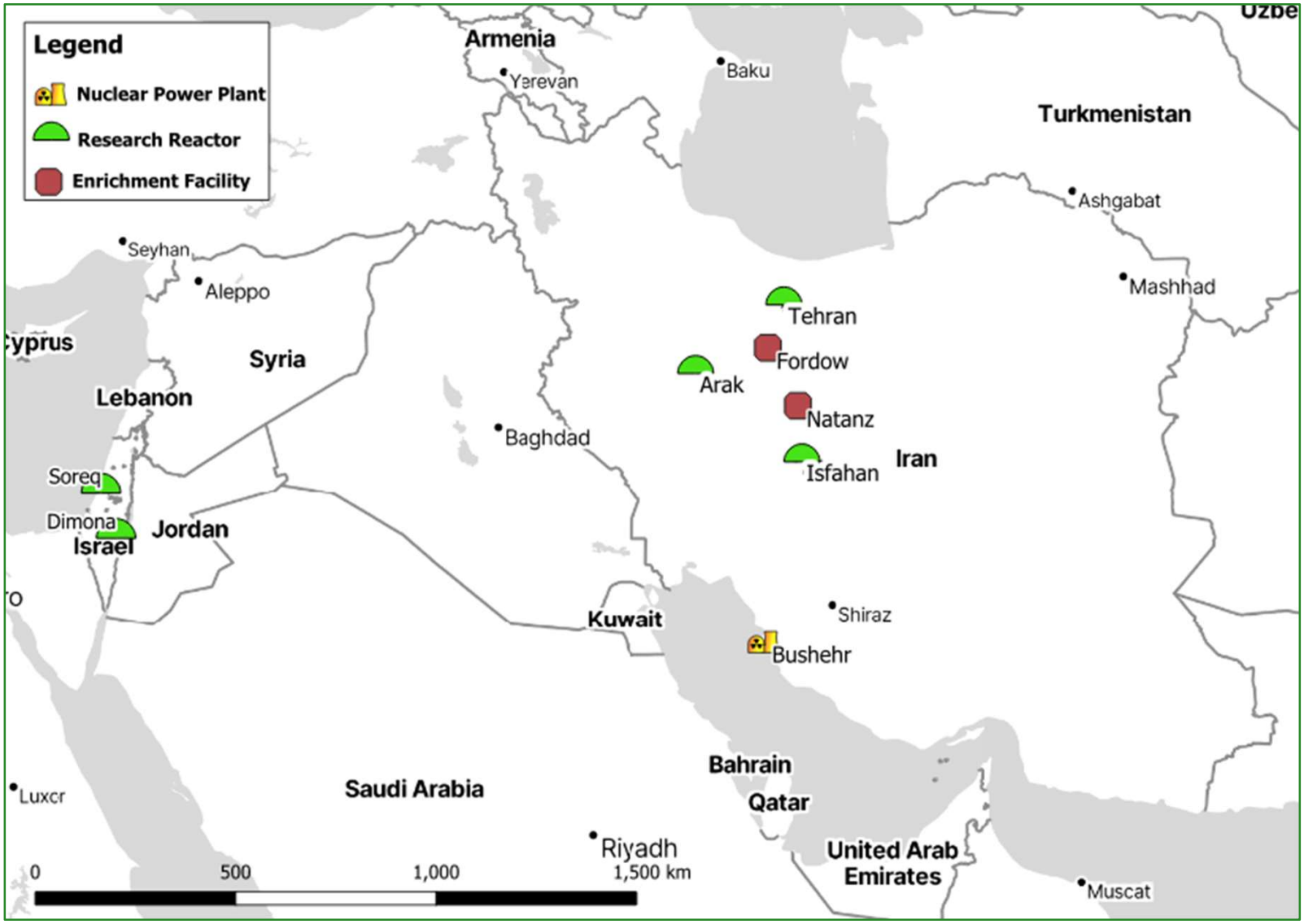
There have been no recent detections on this network that would indicate a significant release from a nuclear facility in Iran.

If there was a significant release from a nuclear reactor, it would be detected by the IMS network. However, the measurement process takes several days, so these stations do not provide an early warning system of a nuclear incident or provide real-time measurements to help inform urgent protective actions.

ARPANSA acknowledges ASNO as the National Authority under Article 3 of the CTBT for the release of IMS data.

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Locations of nuclear facilities in Iran and Israel

Figure 10

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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Document 38

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

On 24 June, a ceasefire came into effect between Israel and Iran. No strikes on nuclear facilities in the region have been reported following commencement of the ceasefire.

Israel conducted a series of attacks in Iran between 13 June 2025 and 24 June 2025, including repeated strikes on Iranian nuclear sites at Natanz, Esfahan and Fordow. The United States also conducted military strikes on these facilities on 22 June 2025.

The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. The Esfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. Modelling indicates that off-site radiological consequences from an incident at these sites are not significant. This agrees with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site at these locations.

Strikes on the Arak heavy water reactor (which was under construction) and centrifuge production facilities in Karaj do not pose a radiological risk. Strikes by Iran on US military sites in Qatar do not pose a radiological risk. Reporting indicates that the Bushehr Nuclear power plant and Tehran Research Reactor have not been targeted by the strikes.

Iran launched drones and missile strikes as a retaliatory action. Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors.

The greatest radiological hazard would be an incident at the Bushehr reactor in Iran or the Negev Nuclear Facility in Israel. Credible worst-case scenarios for Bushehr, Tehran, Natanz, Esfahan, and Fordow sites in Iran, and Negev and Soreq Nuclear Facilities in Israel have been modelled in this brief. Other research reactors in Iran are relatively low power and are unlikely to pose a significant off-site hazard.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 29 June 2025 10:00 AEST

KEY MESSAGES

- A ceasefire between Israel and Iran was announced by the US president on 24 June 2025. No strikes on nuclear facilities in the region have been reported following commencement of the ceasefire.
- Modelling indicates that off-site radiological consequences from previous strikes at Natanz, Fordow, and Esfahan facilities are not significant.
- Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. It is unlikely that any urgent protective actions would be required at the embassy locations.
- In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

ARPANSA DUTY OFFICER

s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a)(ii)

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Protective actions that may be required following an incident at the Bushehr Nuclear Power Plant

Should there be a large release of radioactive material from the Bushehr Nuclear Power Plant, radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local Directions: Follow local directions provided with regard to protective actions such as evacuation.

ARPANSA assessment indicates that this protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

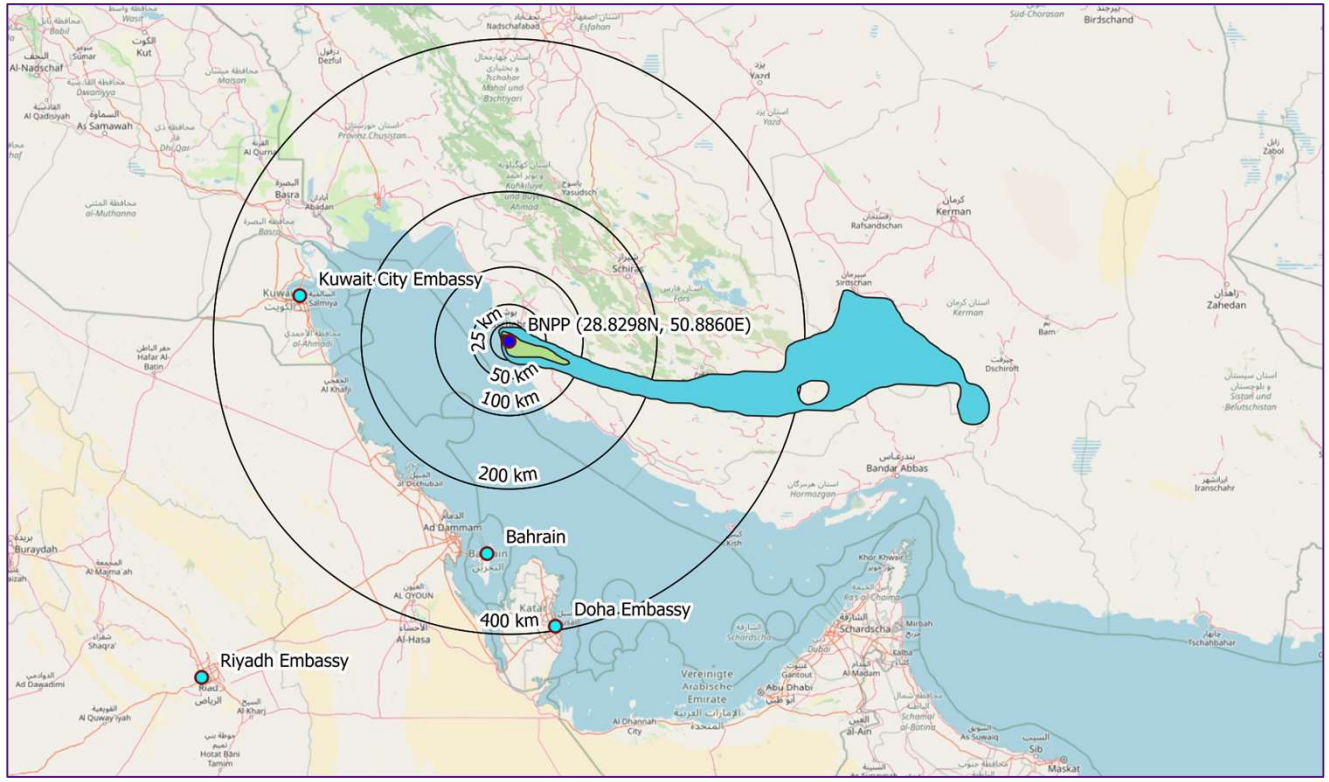
Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran

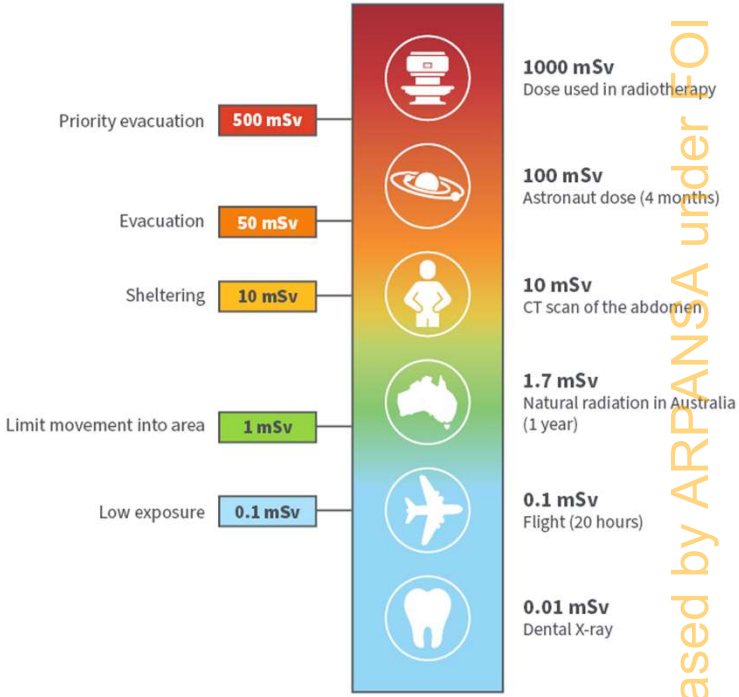


Modelled release at 12:00 AEST 29 June 2025

Model generated at 08:30 AEST on 29 June 2025

Figure 1

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

Released by ARPANSA under FOI

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 3000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east of the site

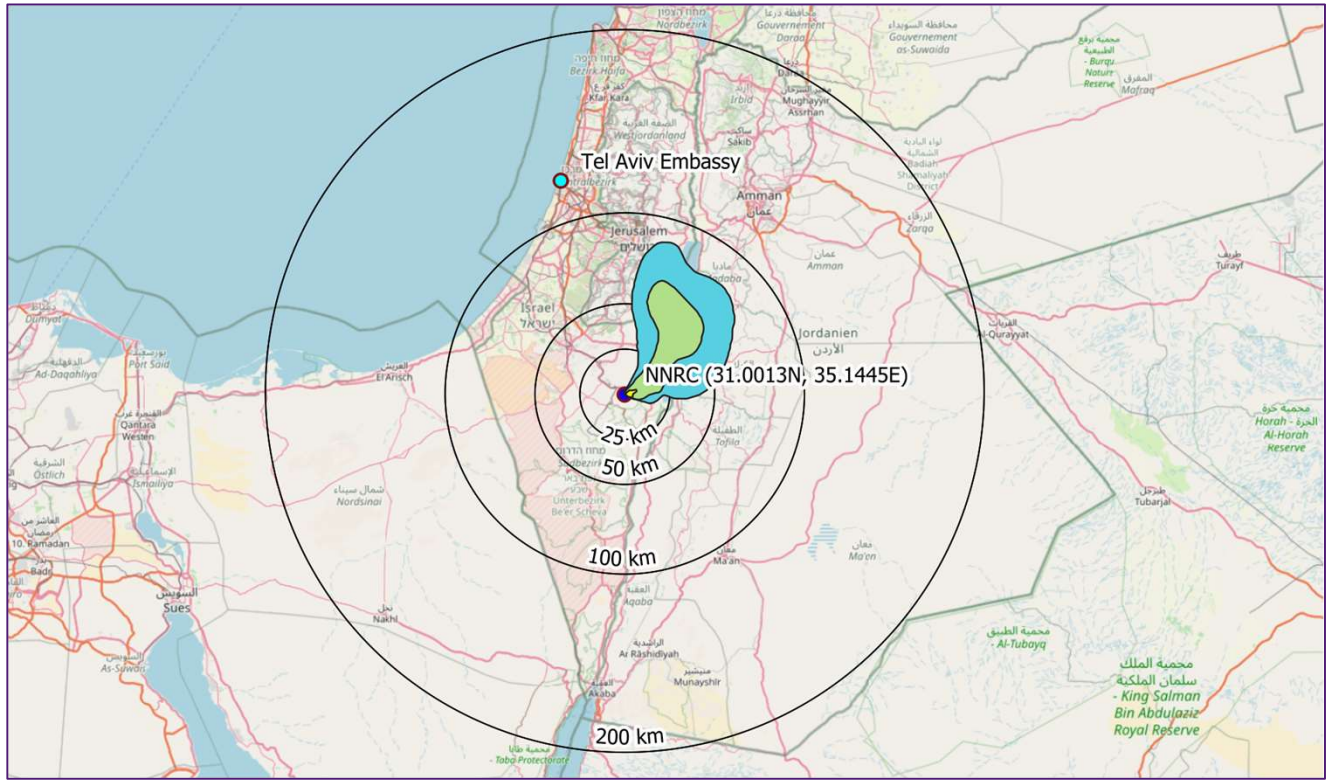
Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 10 km from the site
Sheltering and KI Tablets: May be required up to 50km from the site
Food and water restrictions: May be required to several hundred km from the site.

COMMENTS

Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

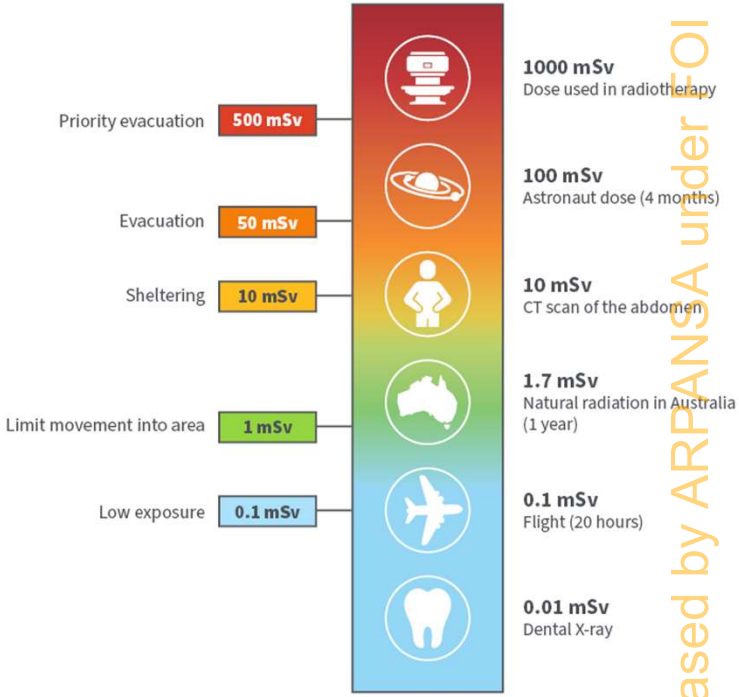
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



Modelled release at 12:00 AEST 29 June 2025 Model generated at 08:30 AEST on 29 June 2025 *Figure 2*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply.
Reactor power assumed to be 150 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east and north-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 20 km from the site
Food and water restrictions: May be required up to 100 km.

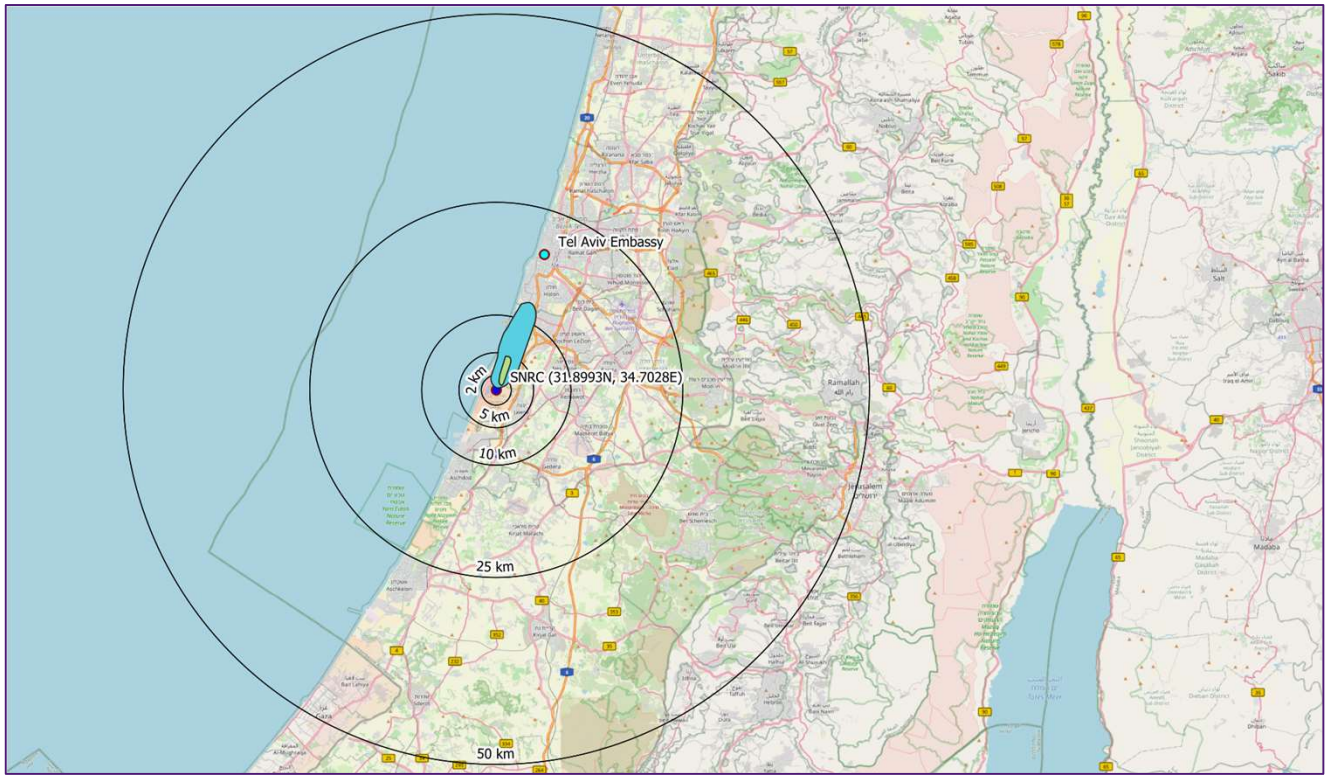
COMMENTS

Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Negev facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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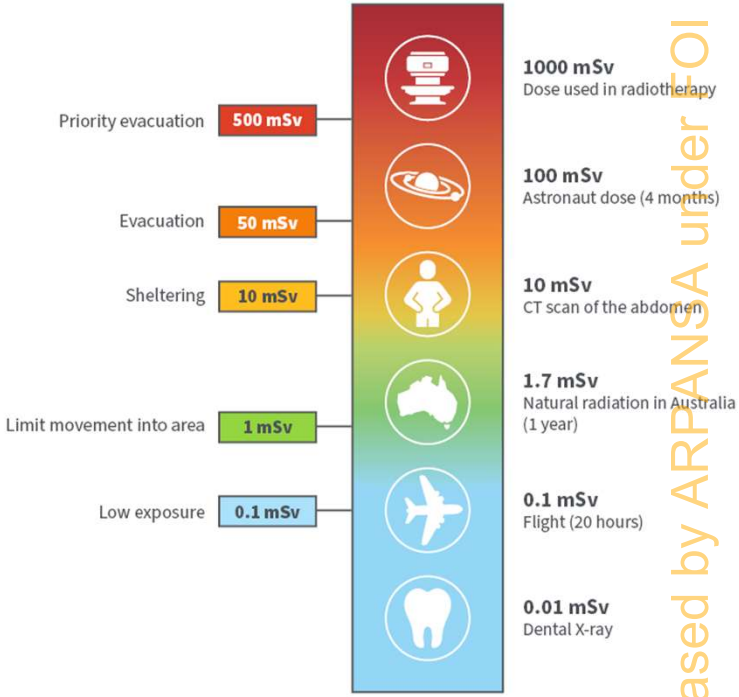
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



Modelled release at 12:00 AEST 29 June 2025 Model generated at 08:30 AEST on 29 June 2025 *Figure 3*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

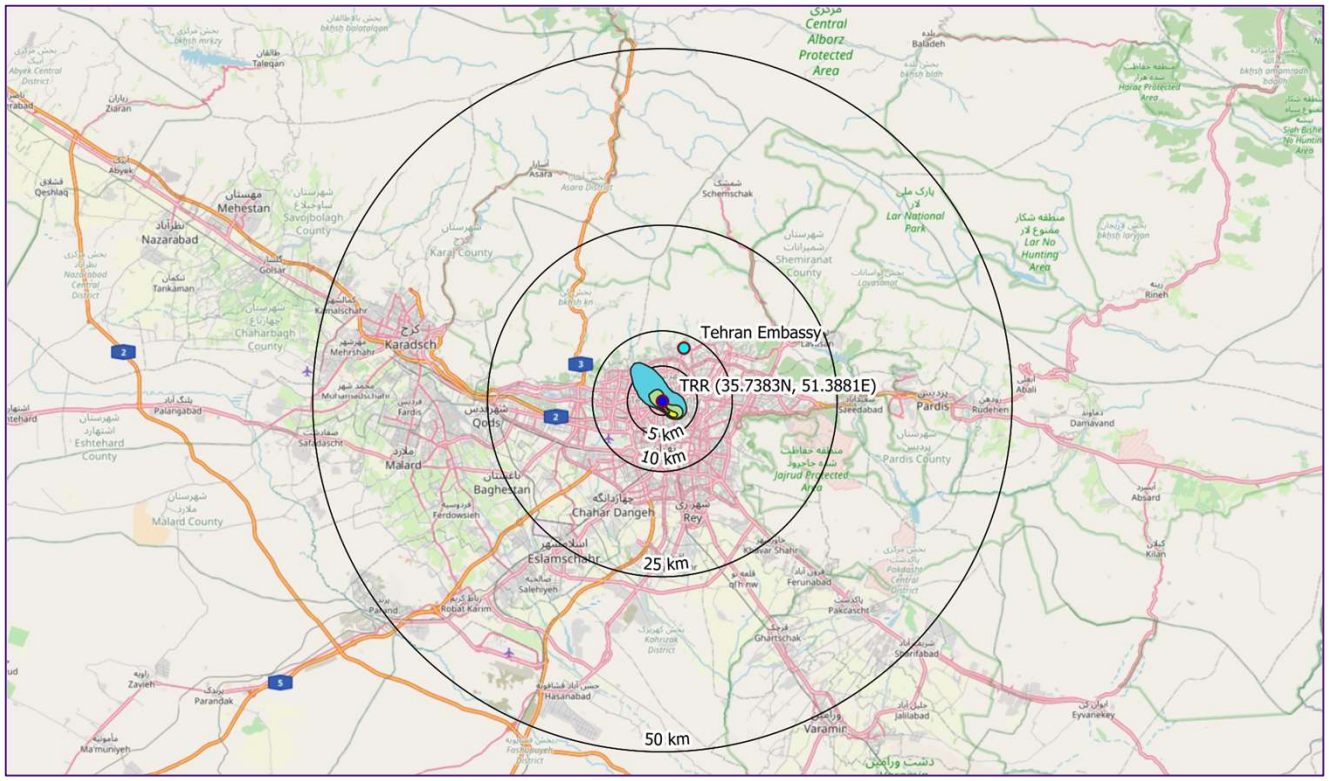
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Soreq facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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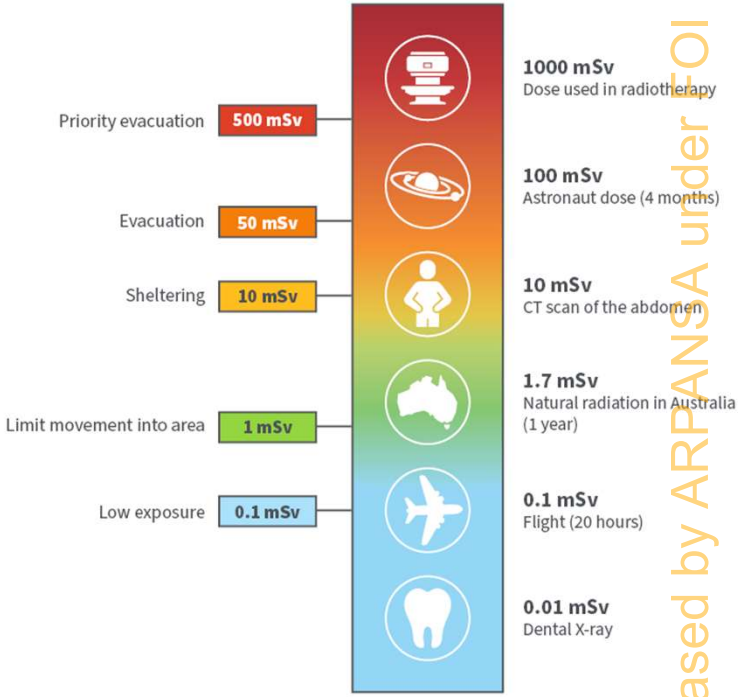
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



Modelled release at 12:00 AEST 29 June 2025 Model generated at 08:30 AEST on 29 June 2025 *Figure 4*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south-east and north-west of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Within several km of the site
Food and water restrictions: May be required up to 10 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tehran is very low due to the distance from the Tehran facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at this embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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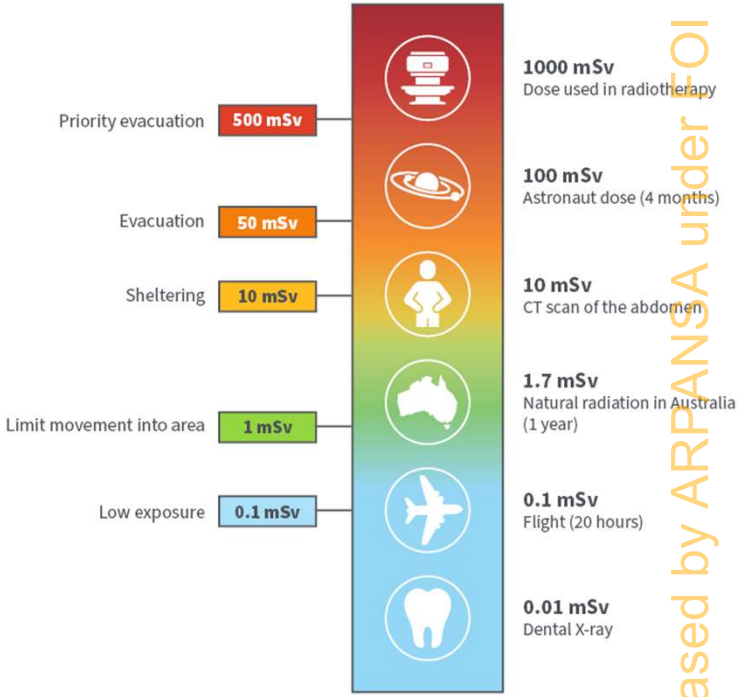
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran



Modelled release at 12:00 AEST 29 June 2025 Model generated at 08:30 AEST on 29 June 2025 *Figure 5*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the west of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

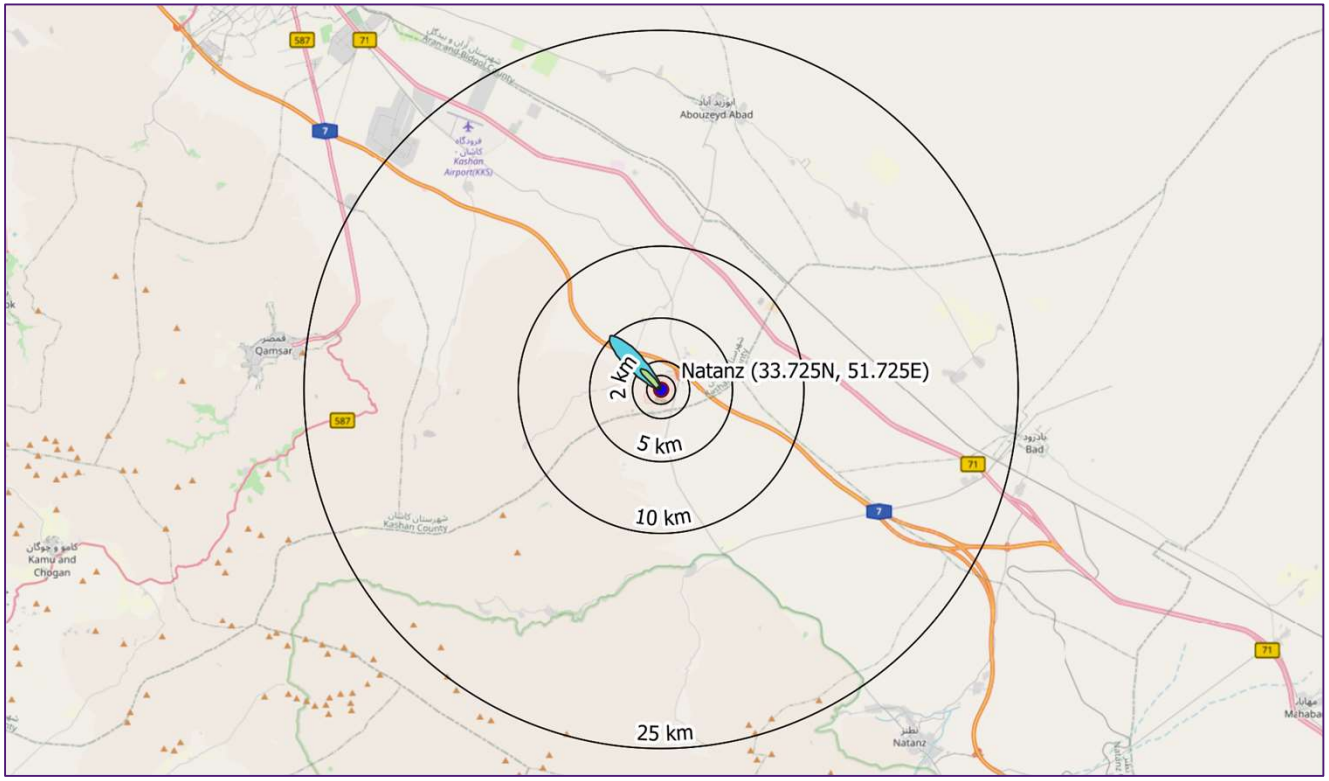
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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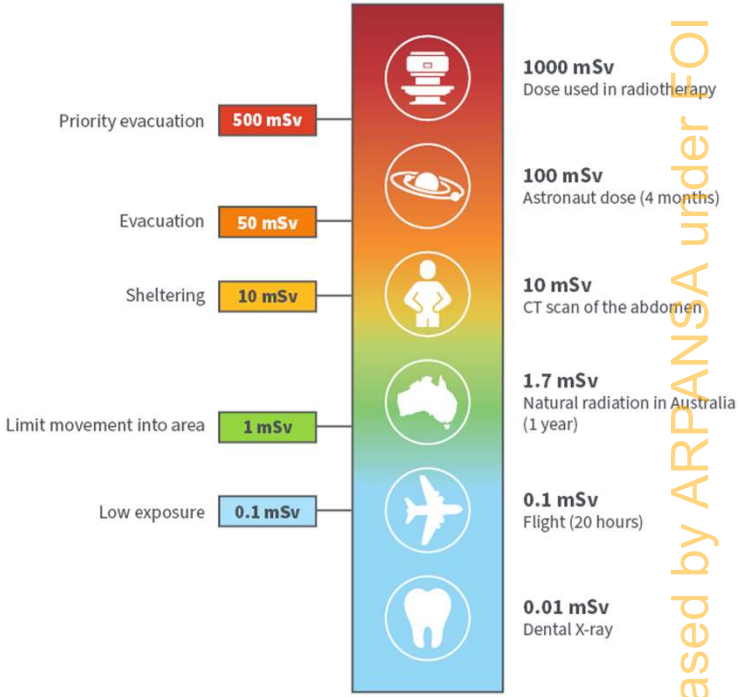
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran



Modelled release at 12:00 AEST 29 June 2025 Model generated at 08:30 AEST on 29 June 2025 *Figure 6*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north-west of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

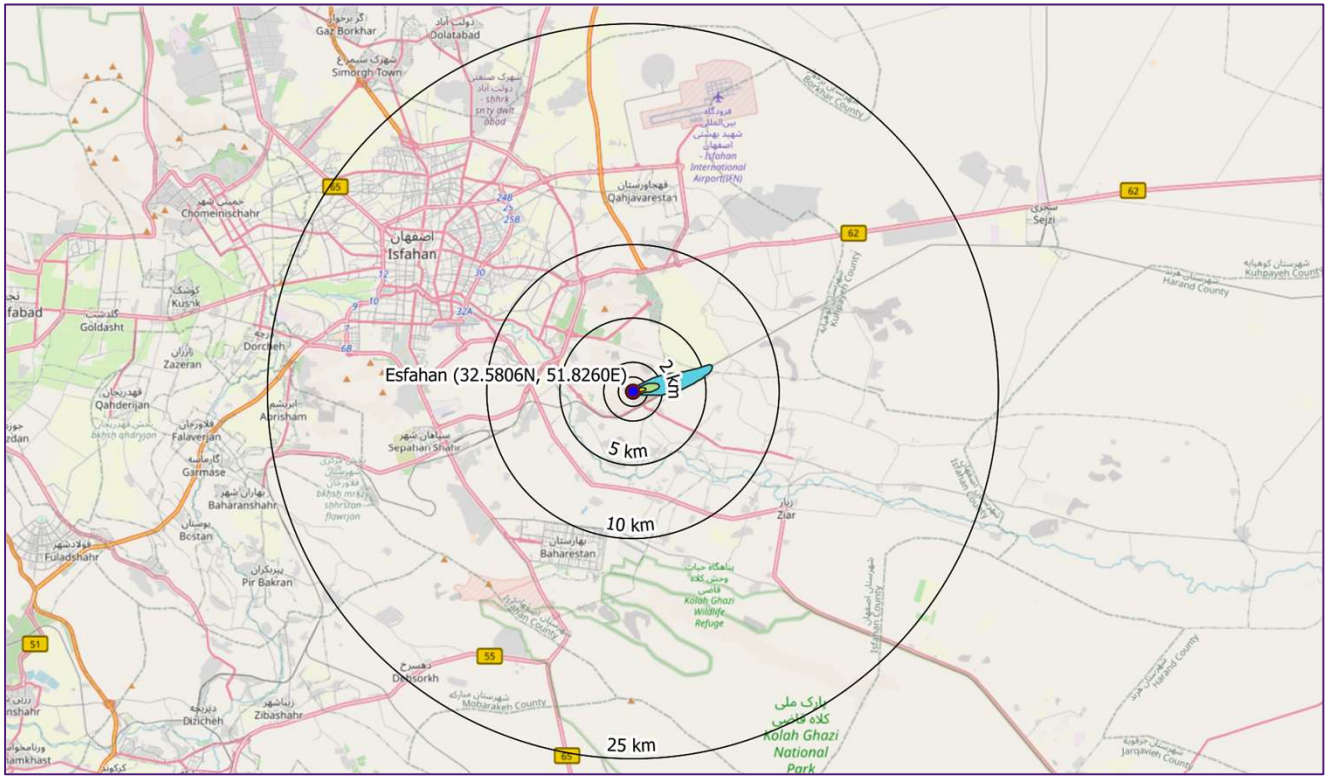
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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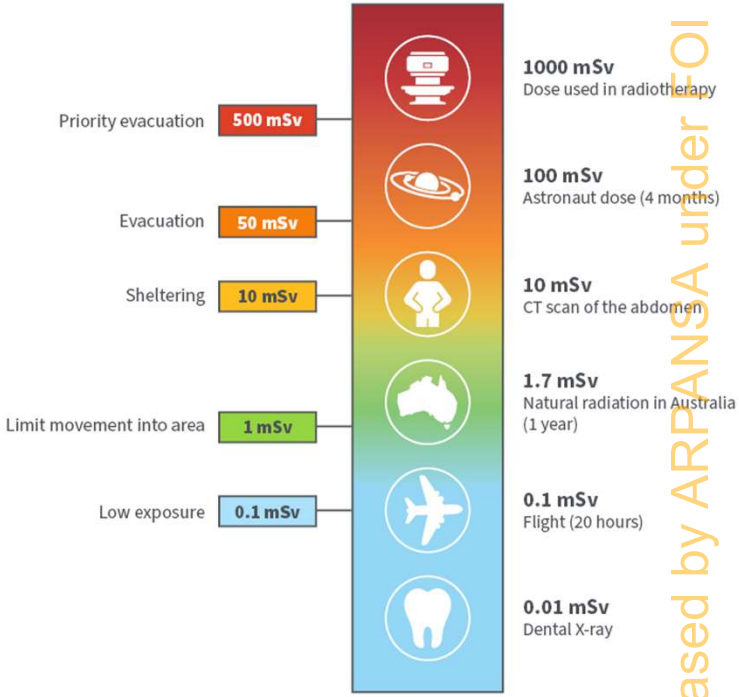
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran



Modelled release at 12:00 AEST 29 June 2025 Model generated at 08:30 AEST on 29 June 2025 *Figure 7*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east of the site

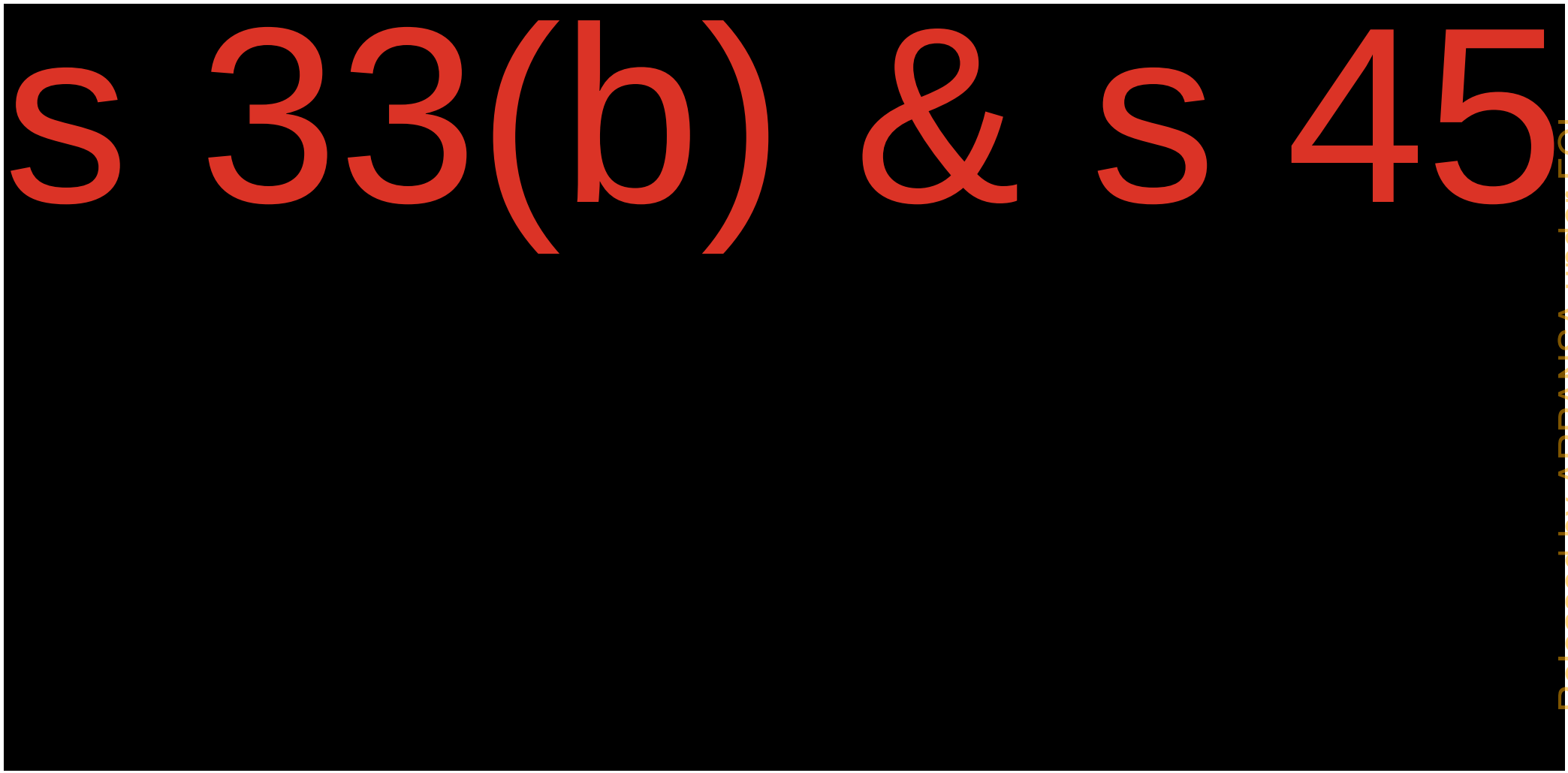
Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. This is consistent with the IAEA statement that no increase in off-site radiation levels has been detected. Radiological and chemical contamination is likely present on-site.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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Figure 8 s 33(b) & s 45

IAEA has stated that no off-site increase in radiation levels have been detected as a result of strikes on nuclear facilities in Iran.

International Radiation Monitoring Information System (IRMIS)

This network is designed to provide near real-time information and can be used to inform urgent protective actions.

A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency.

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

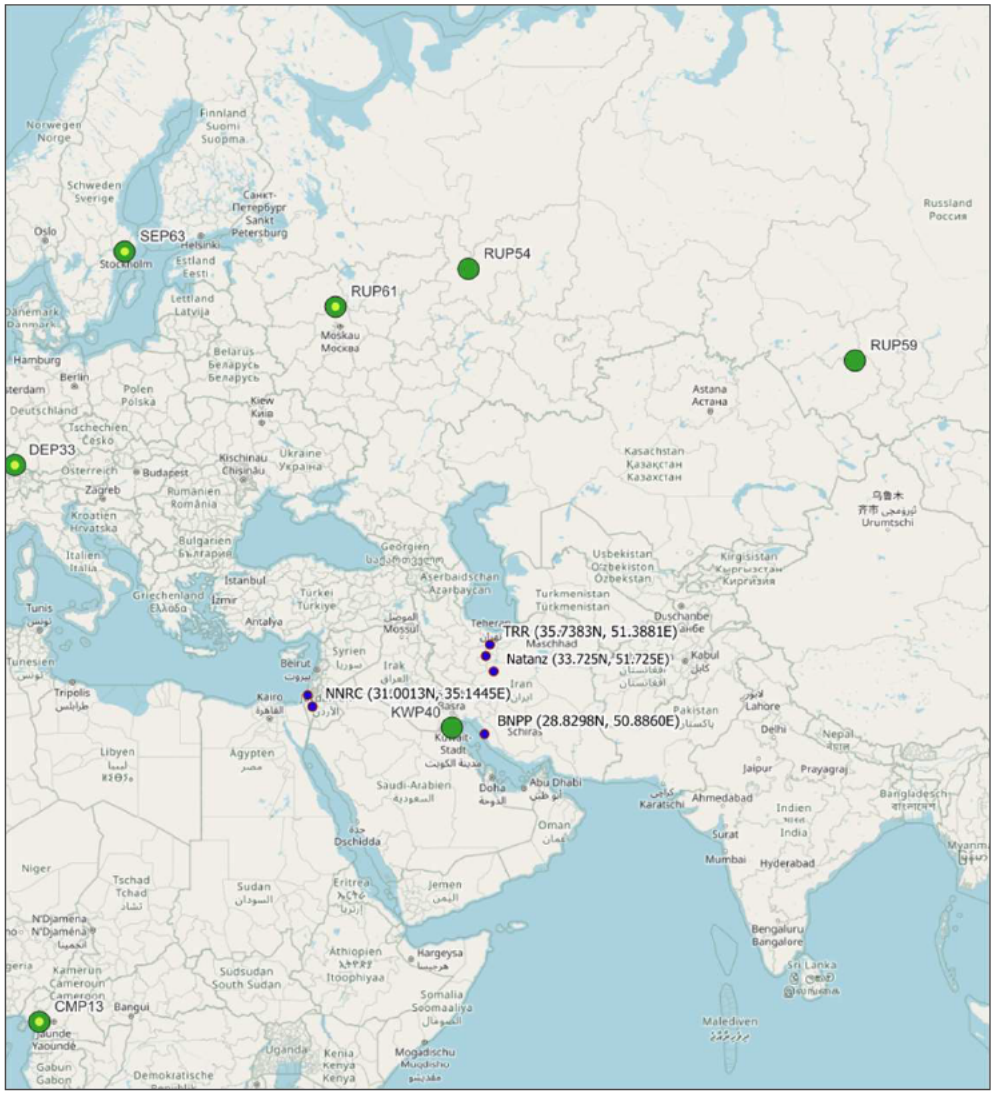


Figure 9 Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System (IMS) radionuclide detection network

International Monitoring System (IMS)

The International Monitoring System is a comprehensive global network of detectors that includes seismic, hydroacoustic, infrasound and radionuclide stations. This network is managed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and is designed to detect clandestine nuclear explosions. The IMS is more sensitive than the IRMIS network and provides different information.

The radionuclide stations in the network can detect very low levels of radiation in the atmosphere. The closest radionuclide station in the region is located in Kuwait City, with other relevant stations in Switzerland, Russia, China, Mongolia, and the British Indian Ocean Territory.

The system is highly effective, having detected all six of North Korea's declared nuclear tests between 2006 and 2017. The network also provided valuable information during the Fukushima nuclear accident, with measurements from stations in Japan helping to identify and quantify the amount of radioactive material that reached certain locations.

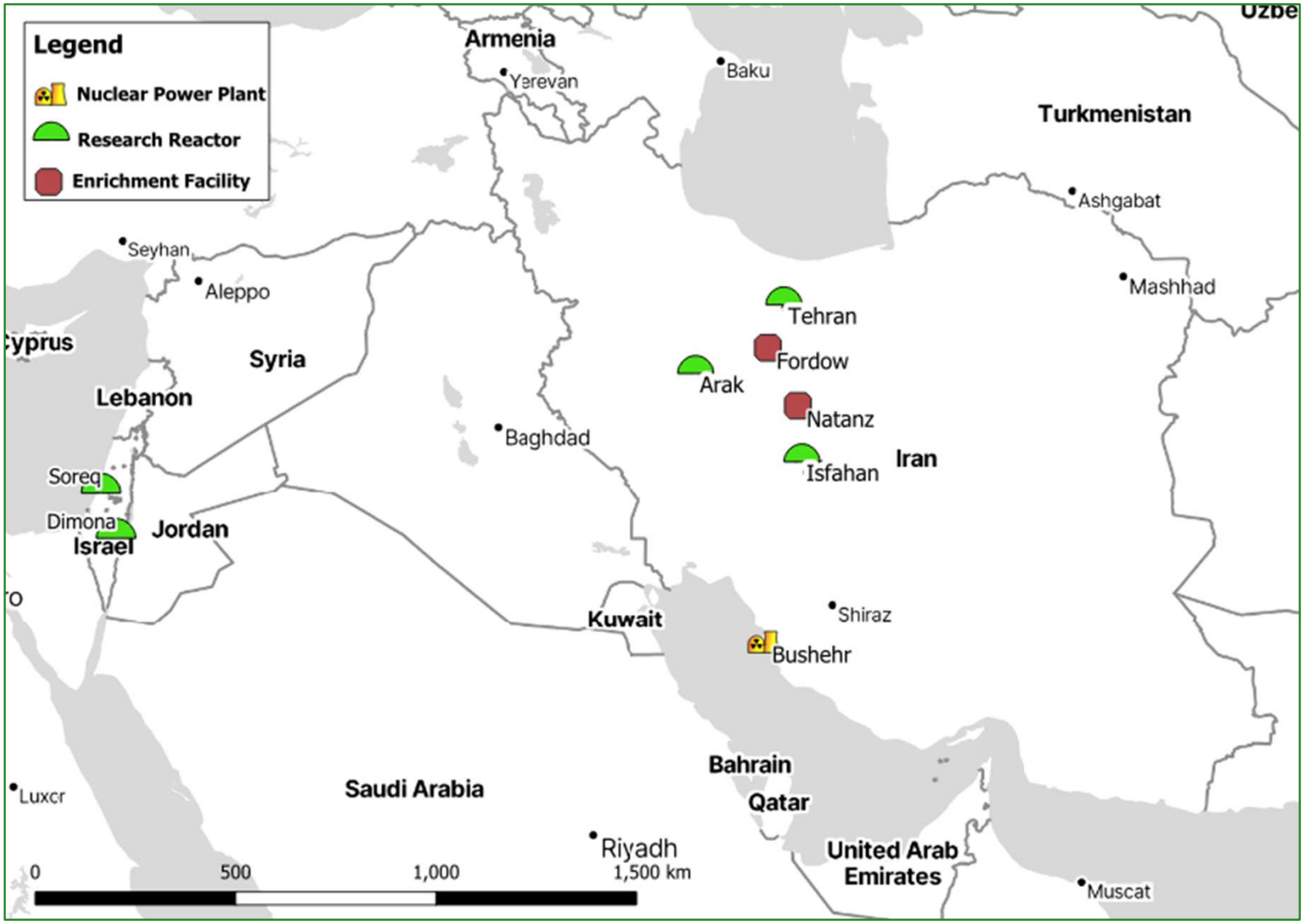
There have been no recent detections on this network that would indicate a significant release from a nuclear facility in Iran.

If there was a significant release from a nuclear reactor, it would be detected by the IMS network. However, the measurement process takes several days, so these stations do not provide an early warning system of a nuclear incident or provide real-time measurements to help inform urgent protective actions.

ARPANSA acknowledges ASNO as the National Authority under Article 3 of the CTBT for the release of IMS data.

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Locations of nuclear facilities in Iran and Israel

Figure 10

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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Document 39

arpansa

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

SITUATION UPDATE

On 28 February 2026, Israel and the United States of America conducted a strike on Iranian targets in Tehran and other regional cities. Iran reportedly retaliated against targets within Israel and on American military installations throughout the Middle East.

Blasts in Esfahan (also spelled Ishfahan) have been reported by various media outlets. This is noteworthy because Esfahan is home to a nuclear research centre linked to Iran's enrichment program that was previously struck during the Twelve-Day War (Israel-Iran War) of 2025. The Esfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant.

Other sites related to Iran's nuclear programme which have been struck previously include the Natanz site and the Fordow site. The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. Modelling indicates that off-site radiological consequences from an incident at either of these sites or at Esfahan are not significant

Strikes occurring in Tehran are not reported to have struck the research reactor in Tehran. Should the research reactor be struck, it poses a low risk due to the small inventory and power output of the academic research reactor.

Israel also has several nuclear facilities, including the Negev Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. The Negev reactor is reported to be of higher power output than the Soreq facility.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 01 March 2026 at 10:00 AEDT

KEY MESSAGES

- On 28 February 2026, Israel, and nearby U.S. military assets traded missile strikes with Iran.
- Modelling indicates that off-site radiological consequences from potential strikes at Esfahan, Negev, and the Tehran research reactor are not significant.
- Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. It is unlikely that any urgent protective actions would be required at the embassy locations.
- In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

ARPANSA DUTY OFFICER

s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a)(ii)

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Protective actions that may be required following an incident at the Bushehr Nuclear Power Plant

Should there be a large release of radioactive material from the Bushehr Nuclear Power Plant, radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local Directions: Follow local directions provided with regard to protective actions such as evacuation.

ARPANSA assessment indicates that this protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

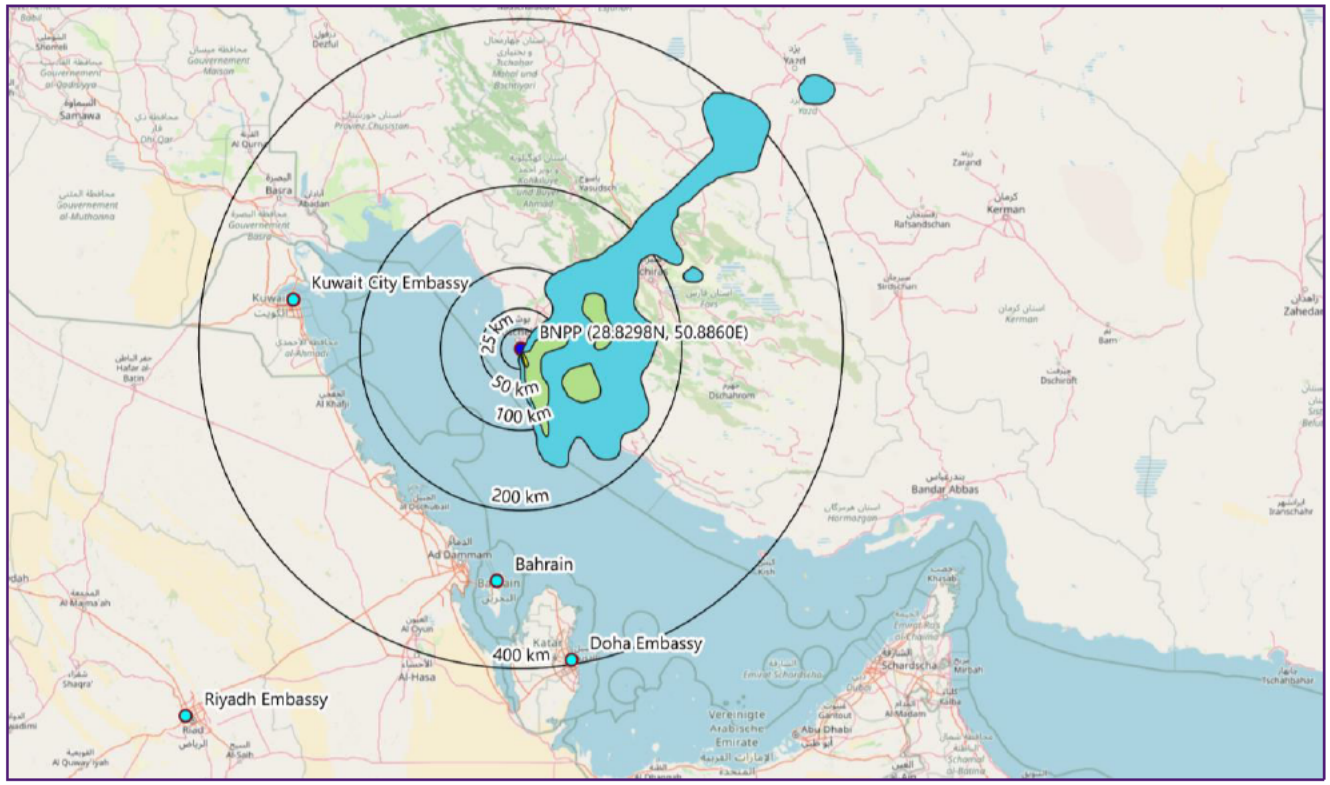
Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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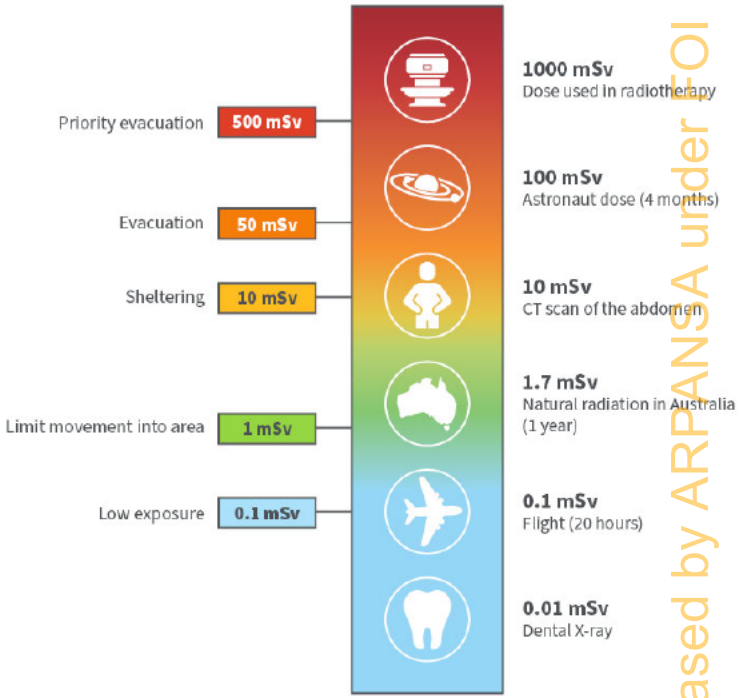
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran



Modelled release at 13:00 AEDT 01 March 2026 Model generated at 22:30 AEDT on 28 February 2026 *Figure 1*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 3000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south, east and north-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 10 km from the site
Sheltering and KI Tablets: May be required up to 70km from the site
Food and water restrictions: May be required up to 100km from the site

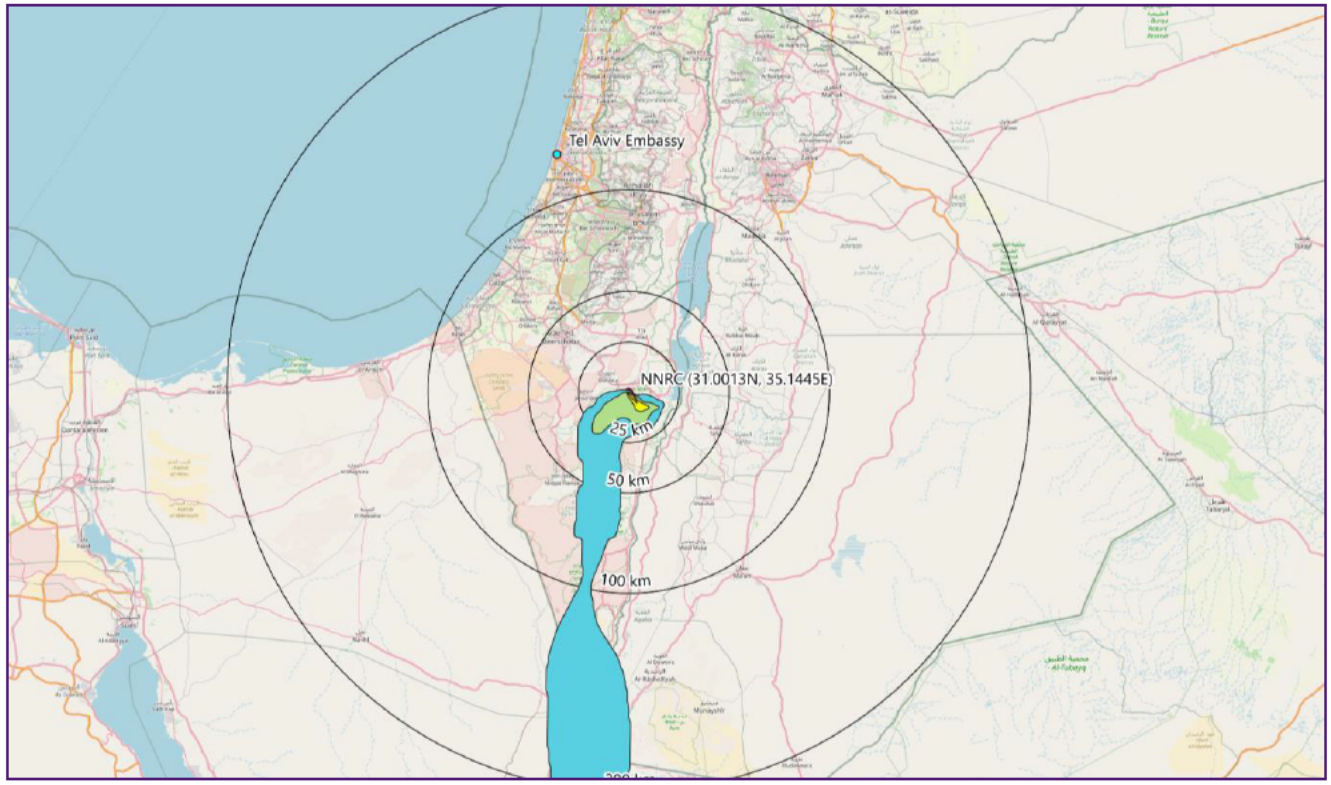
COMMENTS

Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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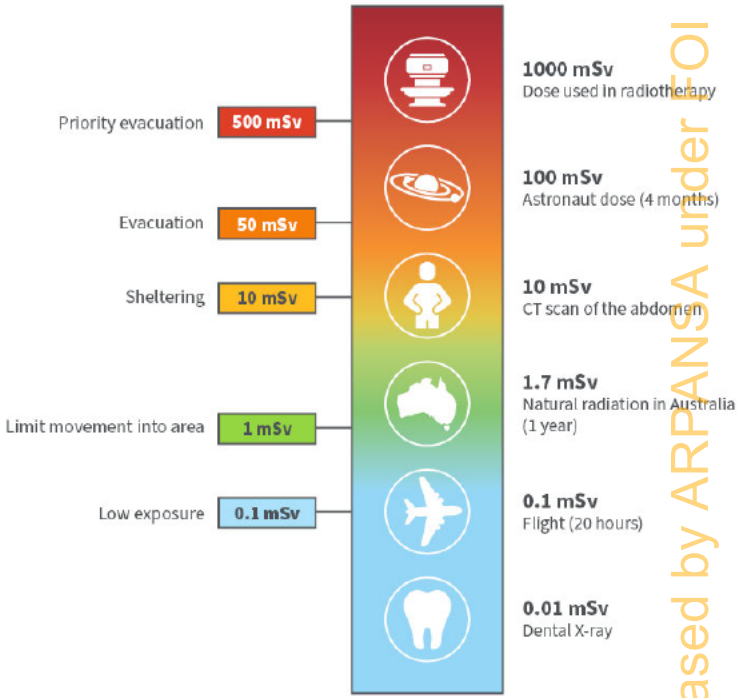
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Israel



Modelled release at 13:00 AEDT 01 March 2026 Model generated at 22:30 AEDT on 28 February 2026 *Figure 2*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to south of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 10 km from the site
Sheltering and KI Tablets: May be required up to 30 km from the site
Food and water restrictions: May be required up to 80 km from the site

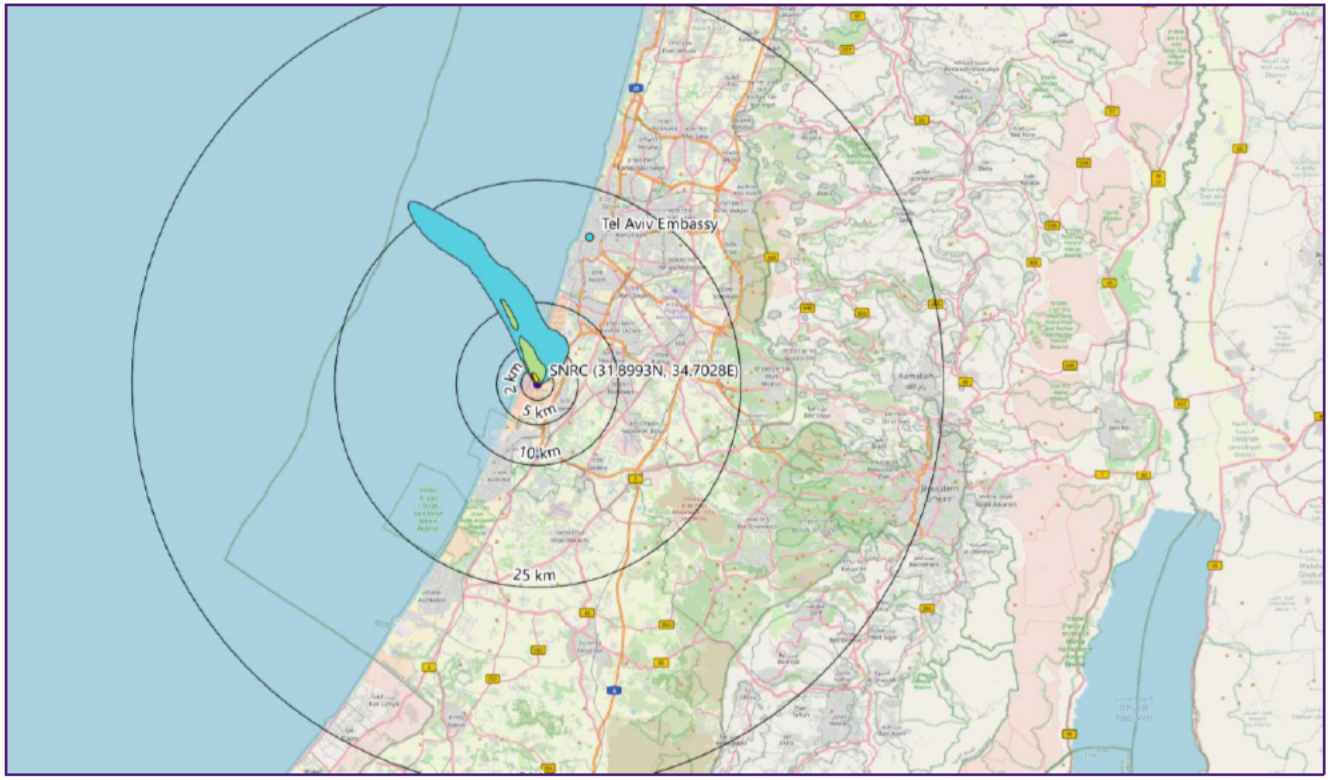
COMMENTS

Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Negev facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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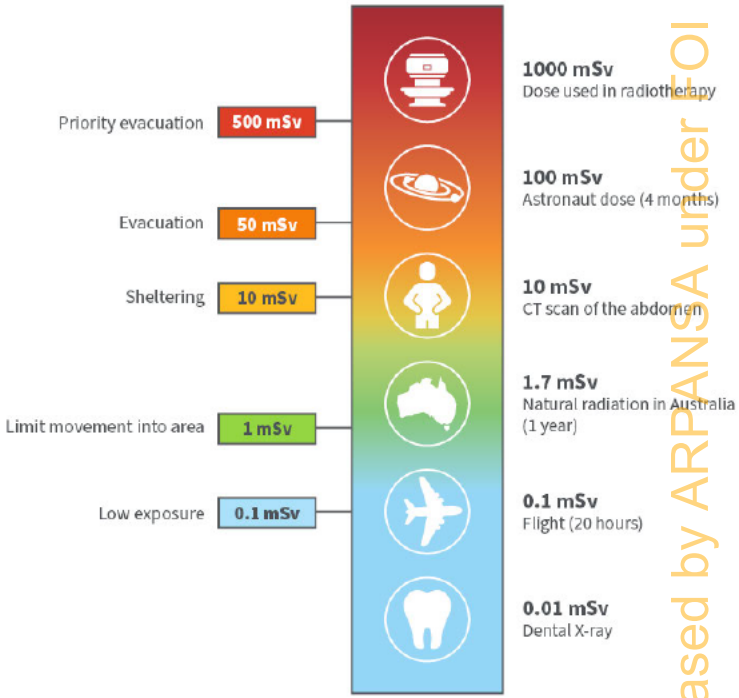
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



Modelled release at 13:00 AEDT 01 March 2026 Model generated at 22:30 AEDT on 28 February 2026 *Figure 3*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction predominantly to the north and north-west of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering and KI Tablets: May be required up to 5 km
Food and water restrictions: May be required up to 15 km.

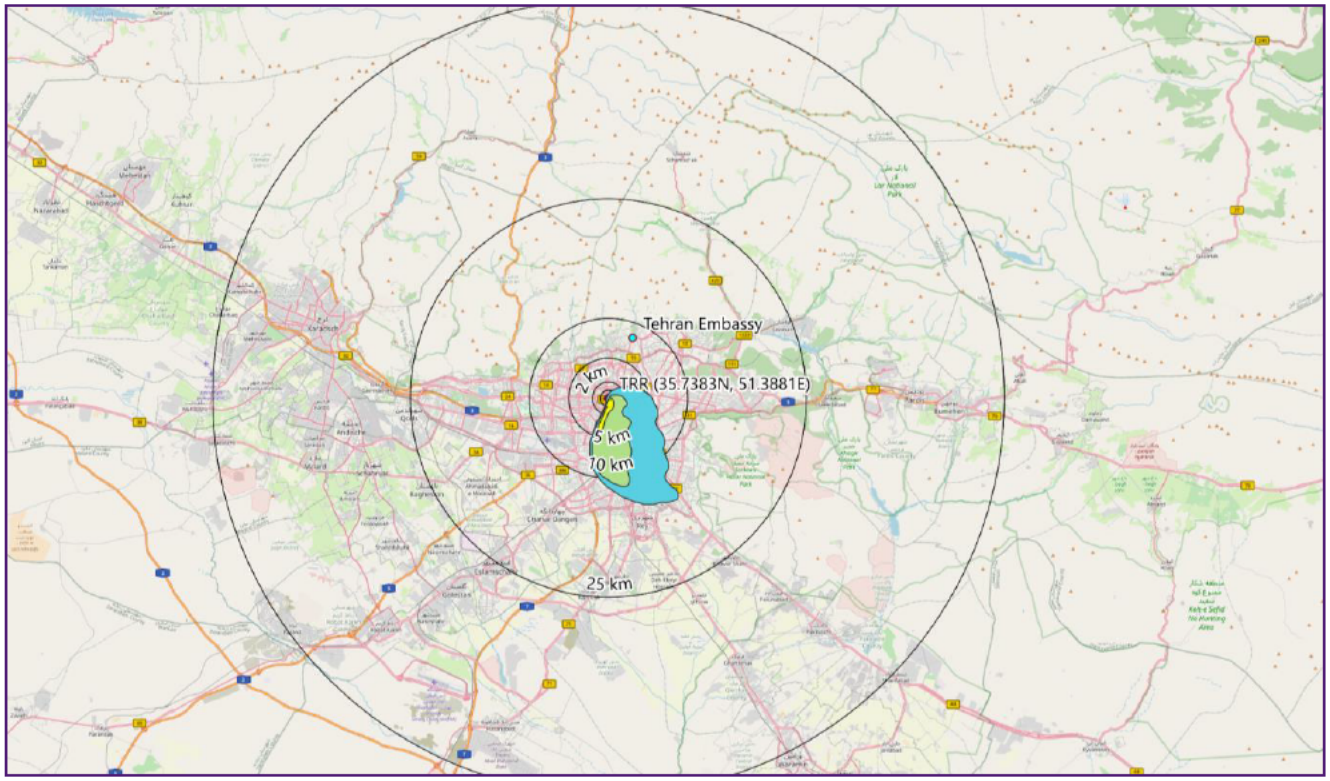
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Soreq facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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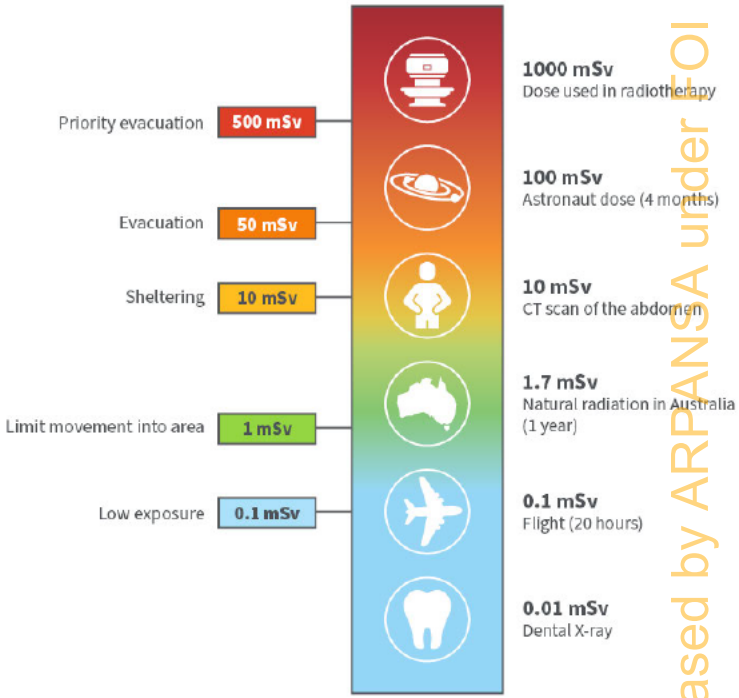
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



Modelled release at 13:00 AEDT 01 March 2026 Model generated at 22:30 AEDT on 28 February 2026 *Figure 4*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south, south-east and east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 1 km from the site
Sheltering and KI Tablets: May be required up to 5 km from the site
Food and water restrictions: May be required up to 15 km from the site.

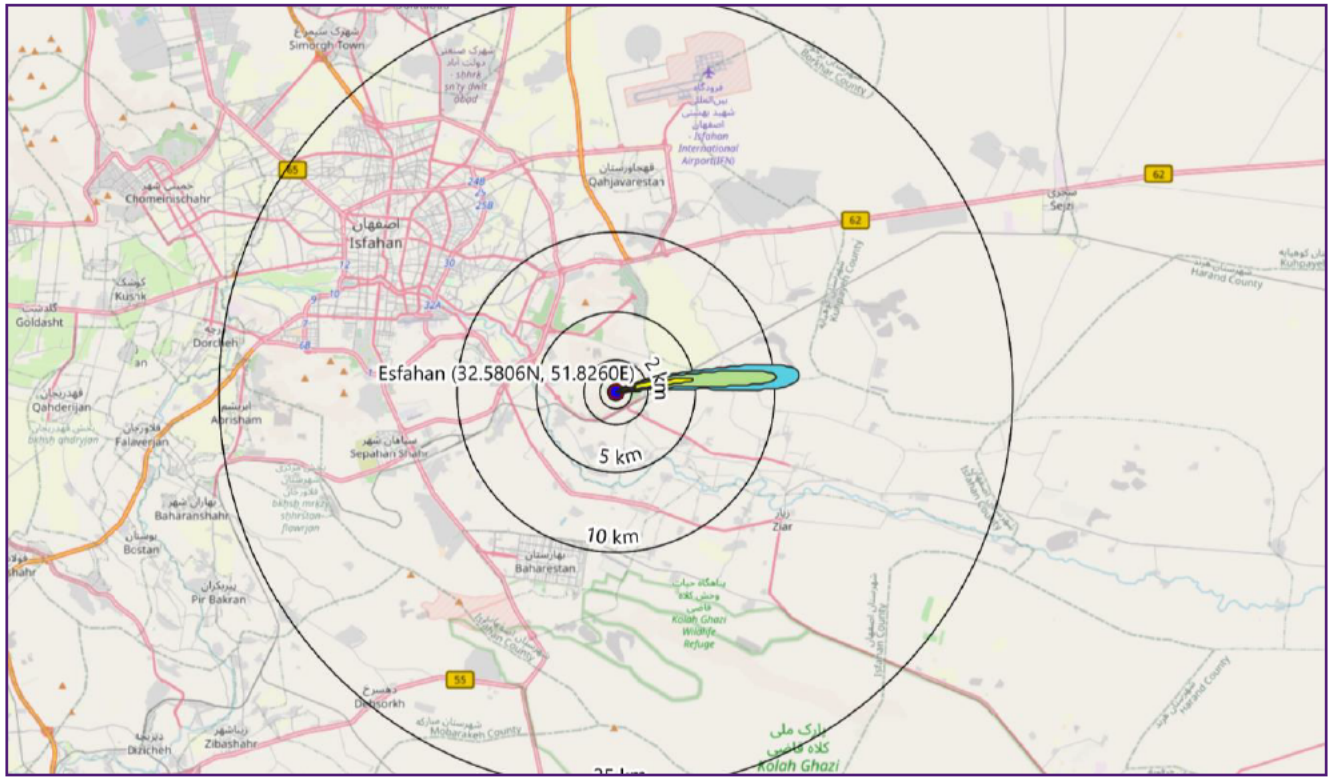
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tehran is very low due to the distance from the Tehran facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at this embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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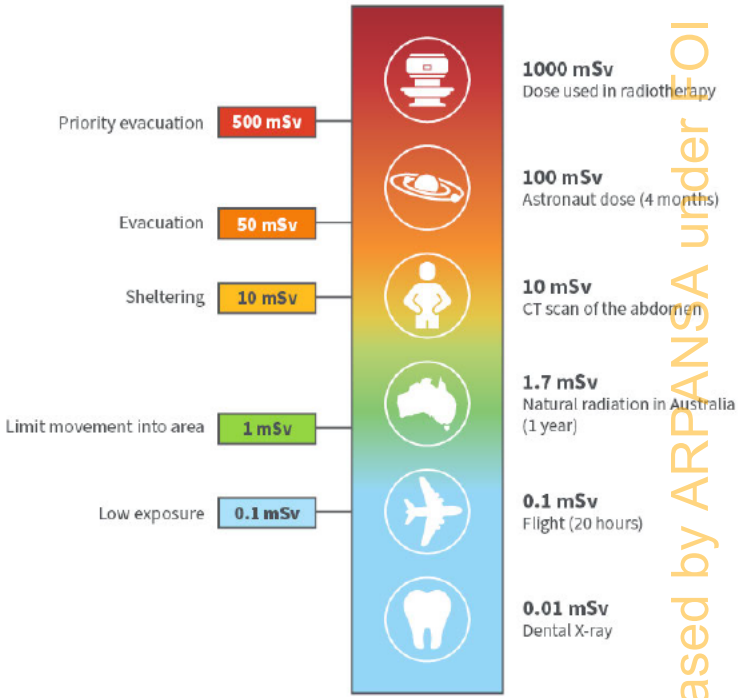
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran



Modelled release at 13:00 AEDT 01 March 2026 Model generated at 22:30 AEDT on 28 February 2026 *Figure 5*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east of the site. Weather conditions during this time period are stable with low wind speeds.

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering: May be required up to 5 km from the site
Food and water restrictions: May be required up to 10 km from the site.

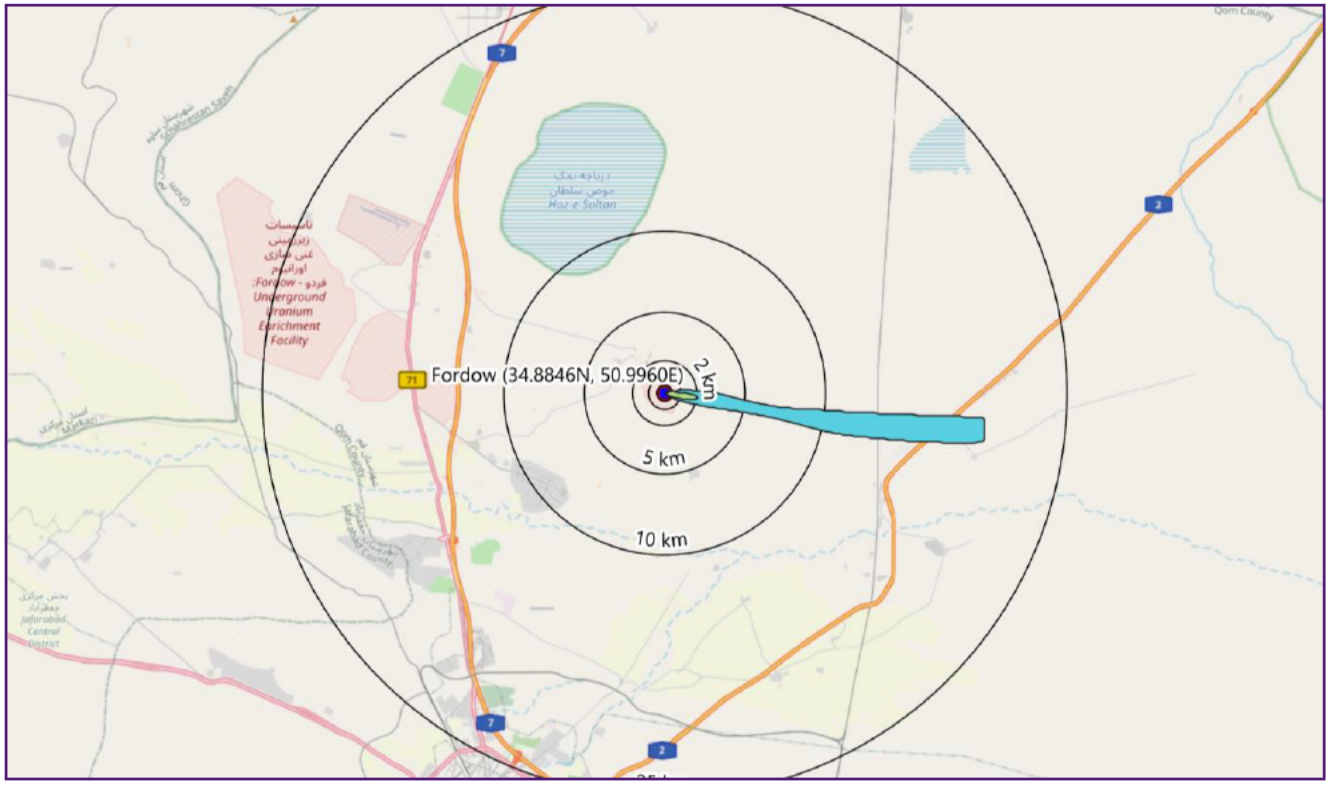
COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

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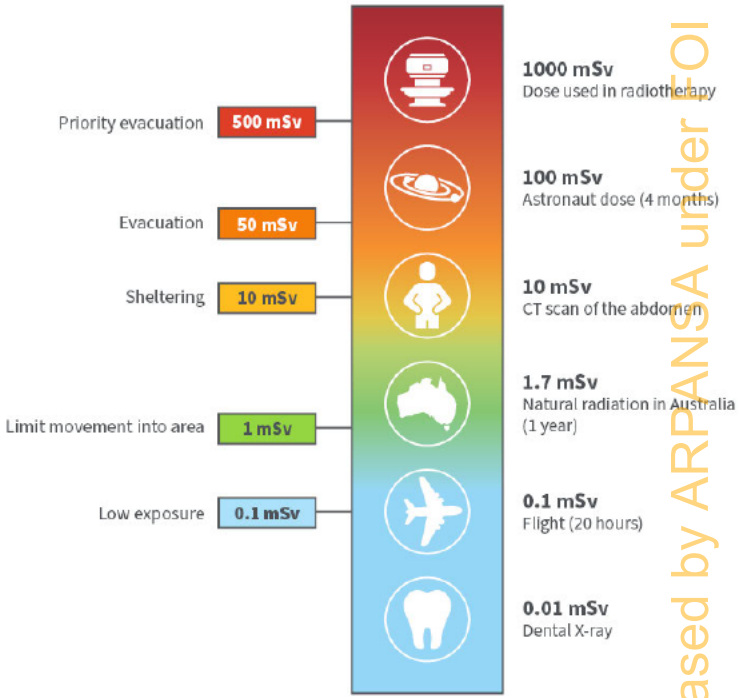
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran



Modelled release at 13:00 AEDT 01 March 2026 Model generated at 22:30 AEDT on 28 February 2026 *Figure 6*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

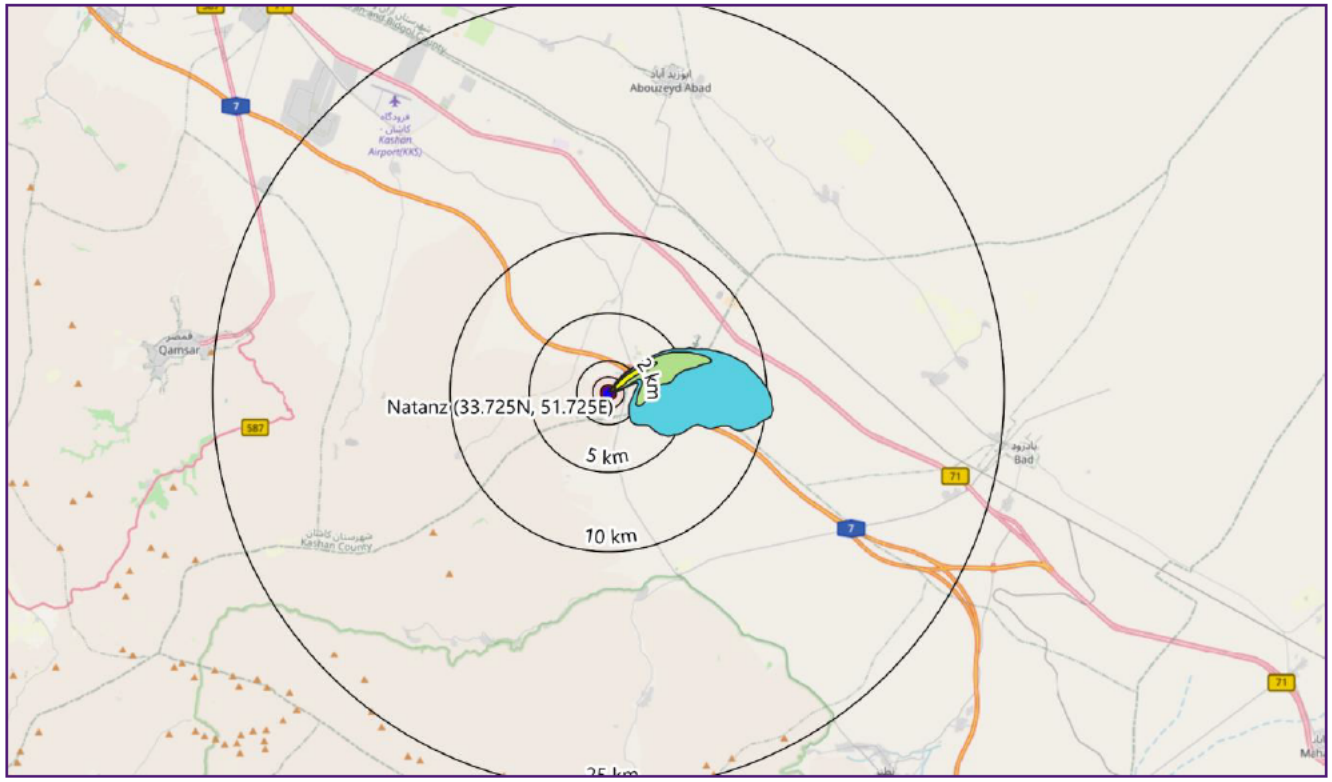
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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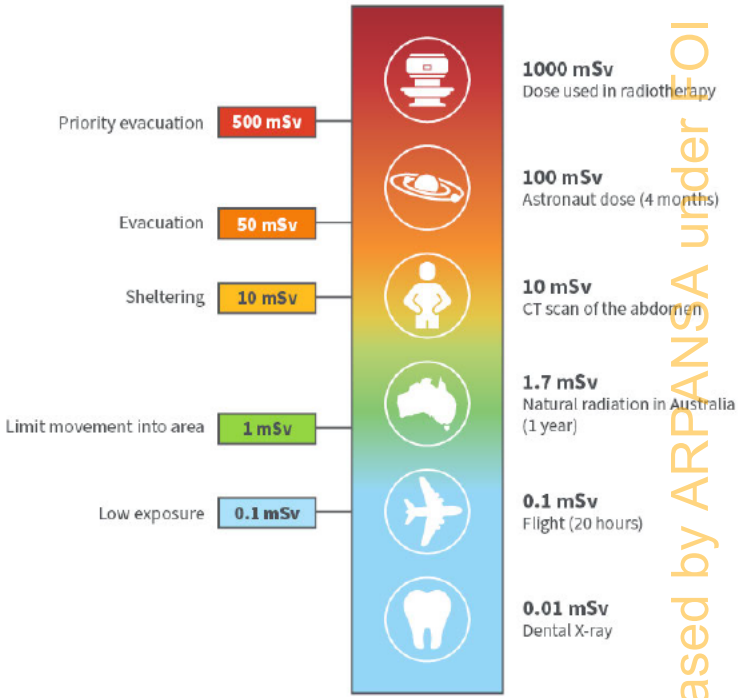
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran



Modelled release at 13:00 AEDT 01 March 2026 Model generated at 22:30 AEDT on 28 February 2026 *Figure 7*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north-east and east of the site. Weather conditions during this time period are stable with low wind speeds.

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering: May be required up to 5 km from the site
Food and water restrictions: May be required up to 10 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

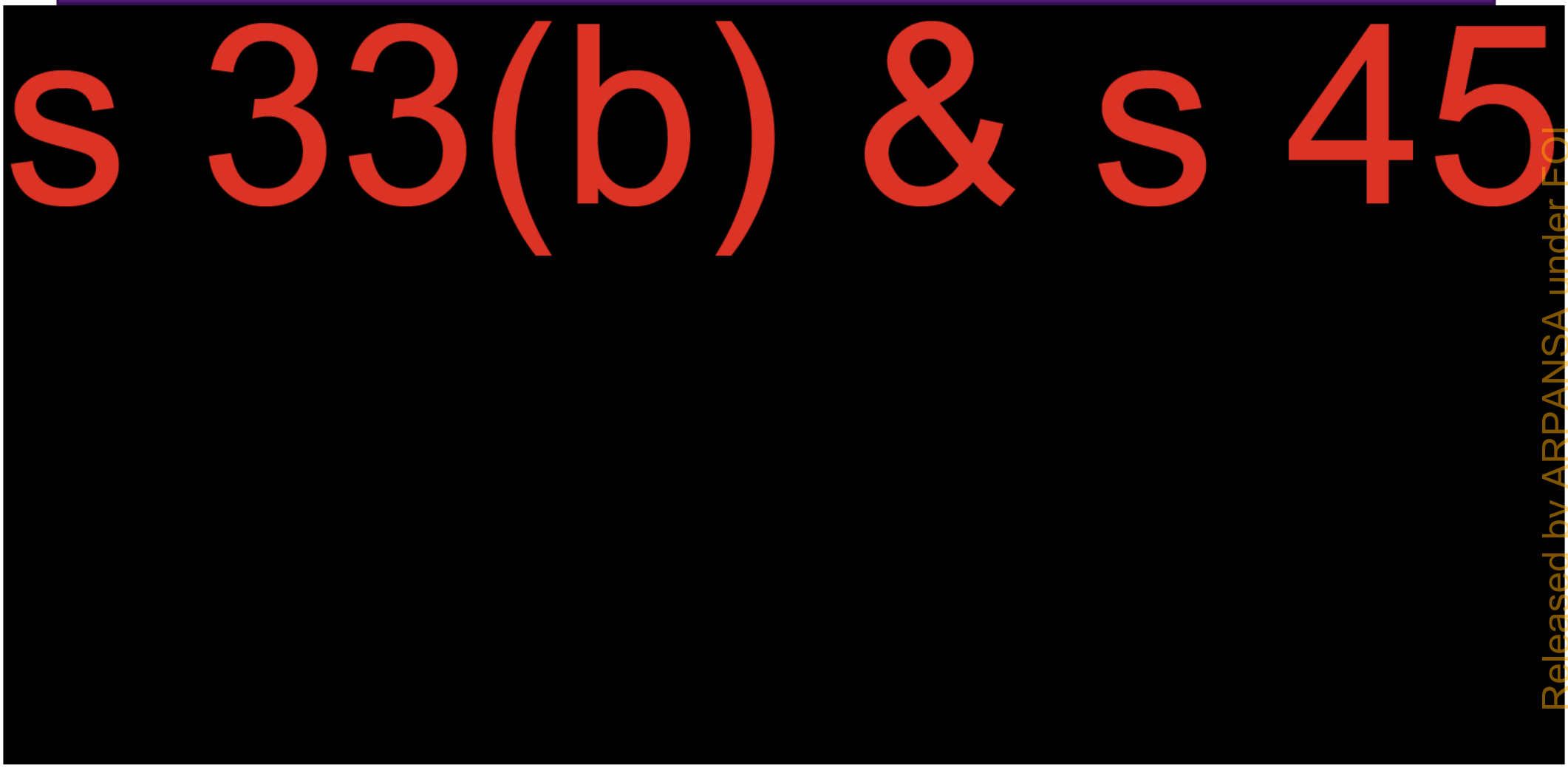


Figure 8 s 33(b) & s 45

International Radiation Monitoring Information System (IRMIS)

This network is designed to provide near real-time information and can be used to inform urgent protective actions.

A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel

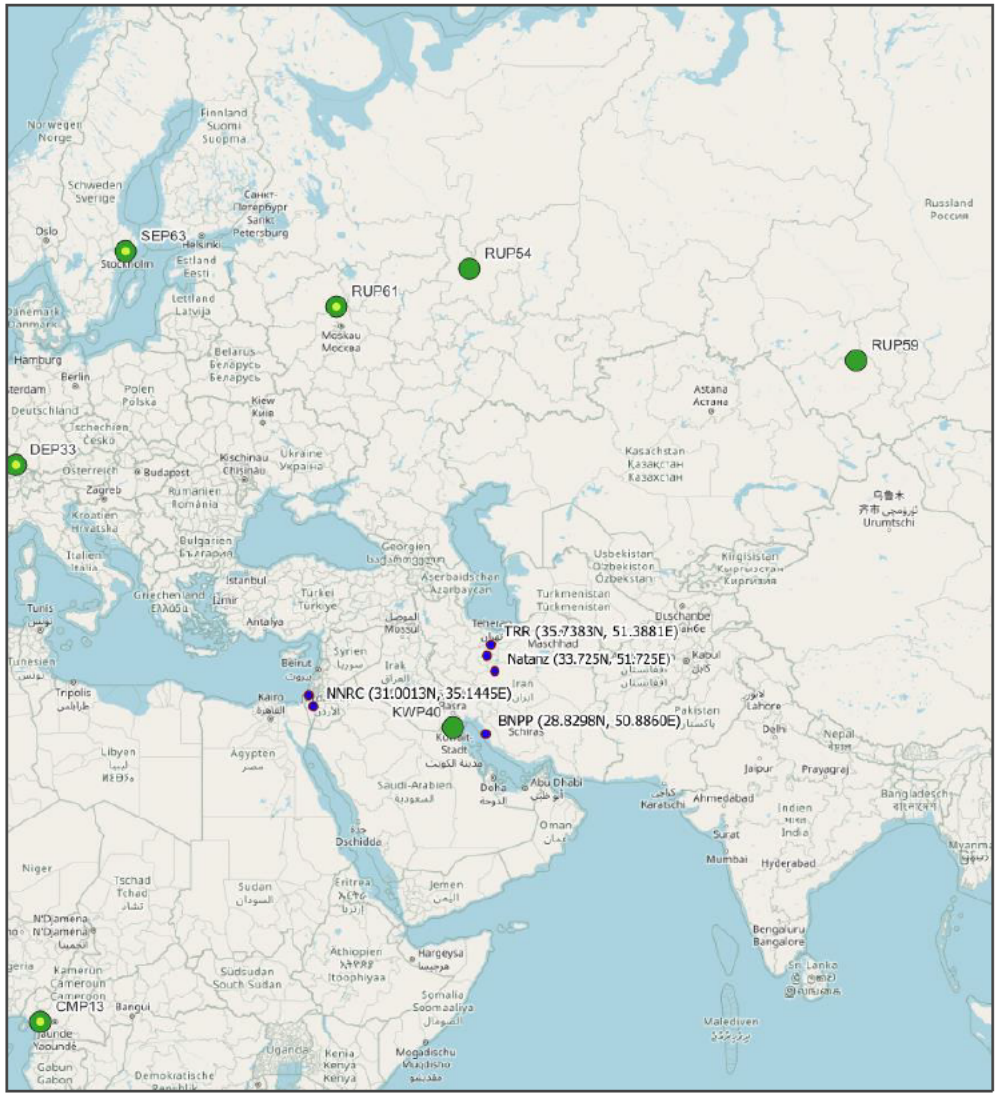


Figure 9 Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System (IMS) radionuclide detection network

International Monitoring System (IMS)

The International Monitoring System is a comprehensive global network of detectors that includes seismic, hydroacoustic, infrasound and radionuclide stations. This network is managed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and is designed to detect clandestine nuclear explosions. The IMS is more sensitive than the IRMIS network and provides different information.

The radionuclide stations in the network can detect very low levels of radiation in the atmosphere. The closest radionuclide station in the region is located in Kuwait City, with other relevant stations in Switzerland, Russia, China, Mongolia, and the British Indian Ocean Territory.

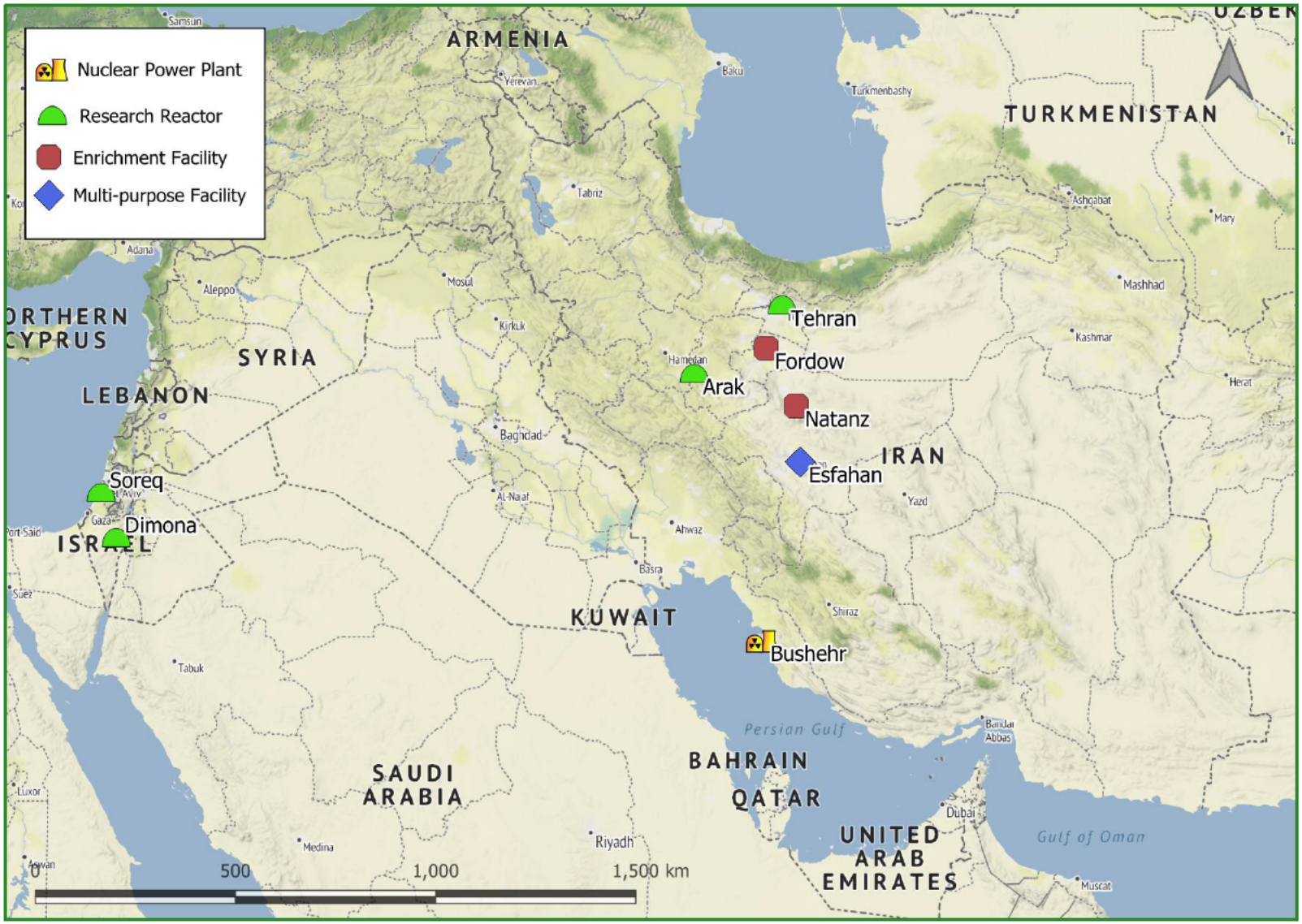
The system is highly effective, having detected all six of North Korea's declared nuclear tests between 2006 and 2017. The network also provided valuable information during the Fukushima nuclear accident, with measurements from stations in Japan helping to identify and quantify the amount of radioactive material that reached certain locations.

If there was a significant release from a nuclear reactor, it would be detected by the IMS network. However, the measurement process takes several days, so these stations do not provide an early warning system of a nuclear incident or provide real-time measurements to help inform urgent protective actions.

ARPANSA acknowledges ASNO as the National Authority under Article 3 of the CTBT for the release of IMS data.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran and Israel



Locations of nuclear facilities in Iran and Israel

Figure 10

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

SITUATION UPDATE

On 28 February 2026, Israel and the United States of America conducted a strike on Iranian targets in Tehran and other regional cities. Iran retaliated against Israel, regional American military assets, and against the Gulf States that host U.S. forward bases. Both sides of the conflict continue to conduct military strikes.

The Esfahan (Isfahan) Nuclear Technology/Research Centre has been reported to have been attacked; however, the strikes appear to be limited to surface strikes at the entry points to the underground facility. The Esfahan site contains a Uranium Conversion Facility and a Fuel Plate Fabrication Plant. The IAEA has acknowledged the strikes but confirmed there were no indications of radioactive releases.

Other sites related to Iran's nuclear program that have been struck previously include the Natanz site and the Fordow site. The Natanz site is home to uranium enrichment facilities including a commercial Fuel Enrichment Plant and the Pilot Fuel Enrichment Plant, which is used to make highly enriched uranium. The Fordow site is also home to a fuel enrichment plant. Modelling indicates that off-site radiological consequences from an incident at either of these sites or at Esfahan are not significant.

Strikes occurring in Tehran are not reported to have struck the research reactor in Tehran. Should the research reactor be struck, it poses a low risk due to the small inventory and power output of the academic research reactor.

Israel also has several nuclear facilities, including the Negev (also called Dimona) Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. The Negev reactor is reported to be of higher power output than the Soreq facility. Iran has recently (5 March) threatened to strike the Negev Nuclear Facility should the U.S. seek regime change in Iran.

Reporting indicates that regional nuclear power plants in Bushehr (Iran) and Barakah (UAE) have not been targeted by the strikes.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 06 March 2026 at 10:00 AEDT

KEY MESSAGES

- Since 28 February 2026 Iran and Israel/The United States have been at war and actively launching drones and missiles.
- Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. It is unlikely that any urgent protective actions would be required at the embassy locations.
- In a worst-case event, embassy staff may be instructed to shelter in place with doors and windows sealed and await further advice.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

ARPANSA DUTY OFFICER

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Protective actions that may be required following an incident at the Nuclear Power Plant

Should there be a large release of radioactive material from the Nuclear Power Plant in the region (Bushehr or Barakah), radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local directions: Follow local directions for protective actions such as evacuation.

ARPANSA assessment indicates that protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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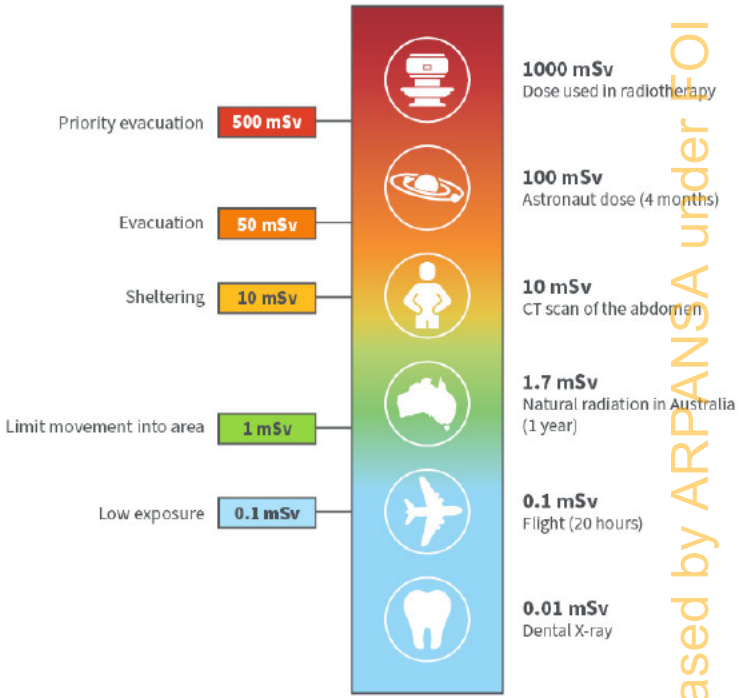
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran



Modelled release at 13:00 AEDT 06 March 2026 Model generated at 10:00 AEDT on 06 March 2026 *Figure 1*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 3000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south and south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 70 km from the site
Food and water restrictions: May be required up to 100 km from the site

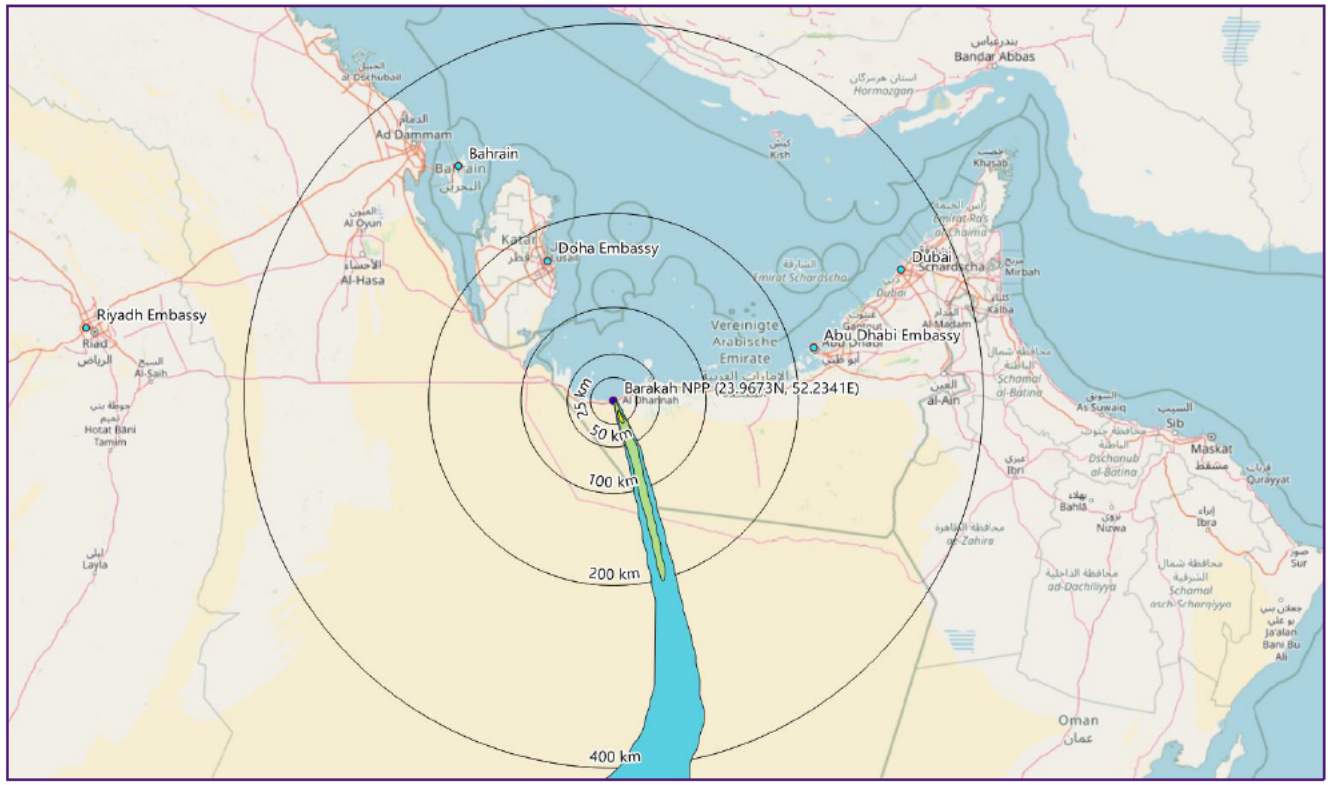
COMMENTS

Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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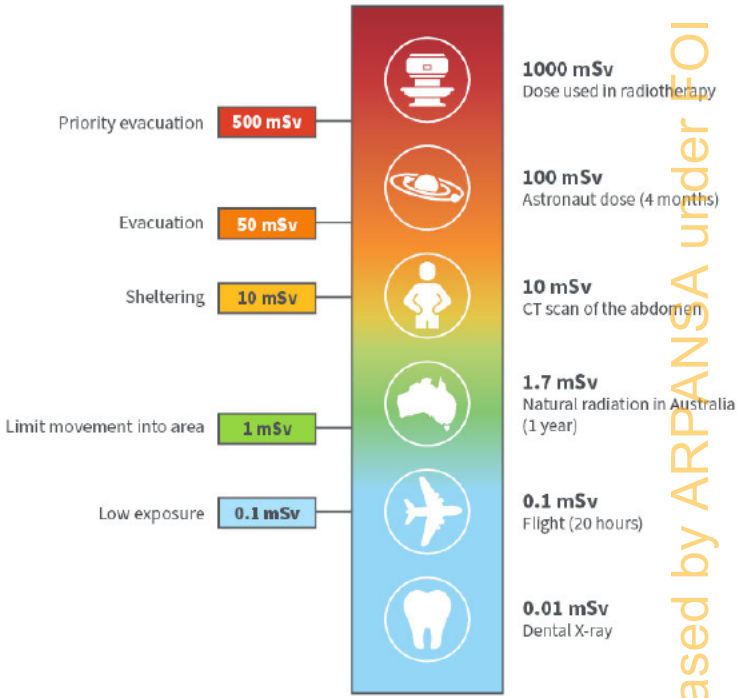
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Barakah Nuclear Power Plant in UAE



Modelled release at 13:00 AEDT 06 March 2026 Model generated at 10:00 AEDT on 06 March 2026 *Figure 2*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 4000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south and south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 70 km from the site
Food and water restrictions: May be required up to 100 km from the site

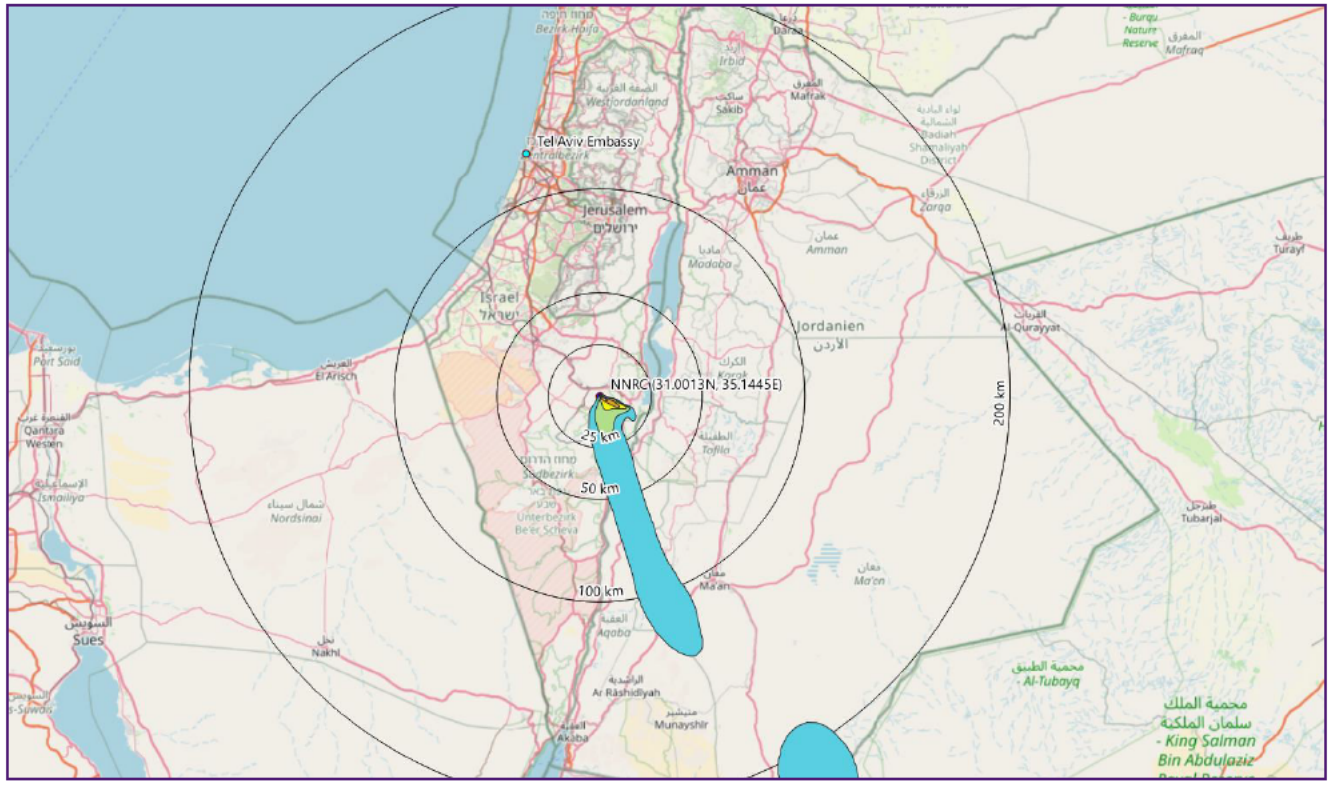
COMMENTS

Radiological risk at Australian embassy locations in Abu Dhabi, Dubai, Doha, Riyadh, and Bahrain is very low due to the distance from the Barakah facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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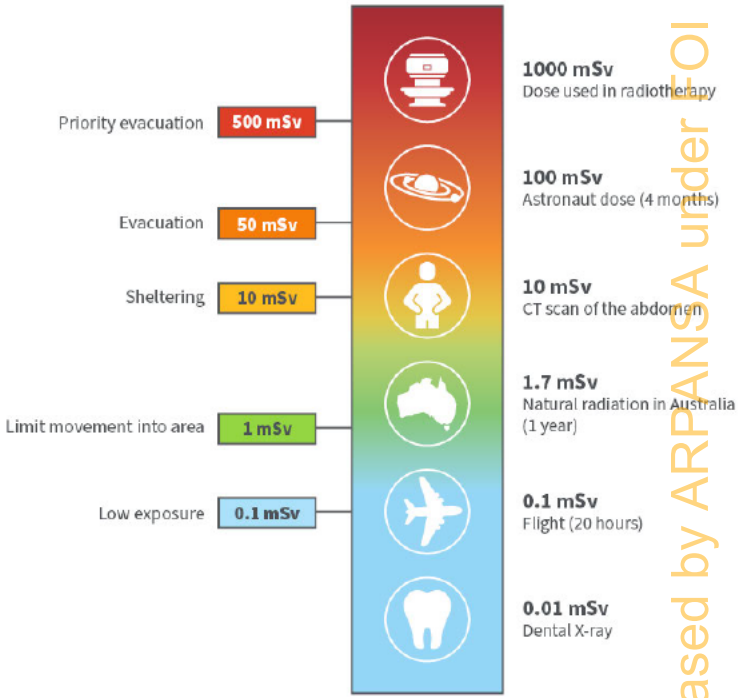
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Dimona, Israel



Modelled release at 13:00 AEDT 06 March 2026 Model generated at 10:00 AEDT on 06 March 2026 *Figure 3*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to east and south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 10 km from the site
Sheltering and KI Tablets: May be required up to 15 km from the site
Food and water restrictions: May be required up to 30 km from the site

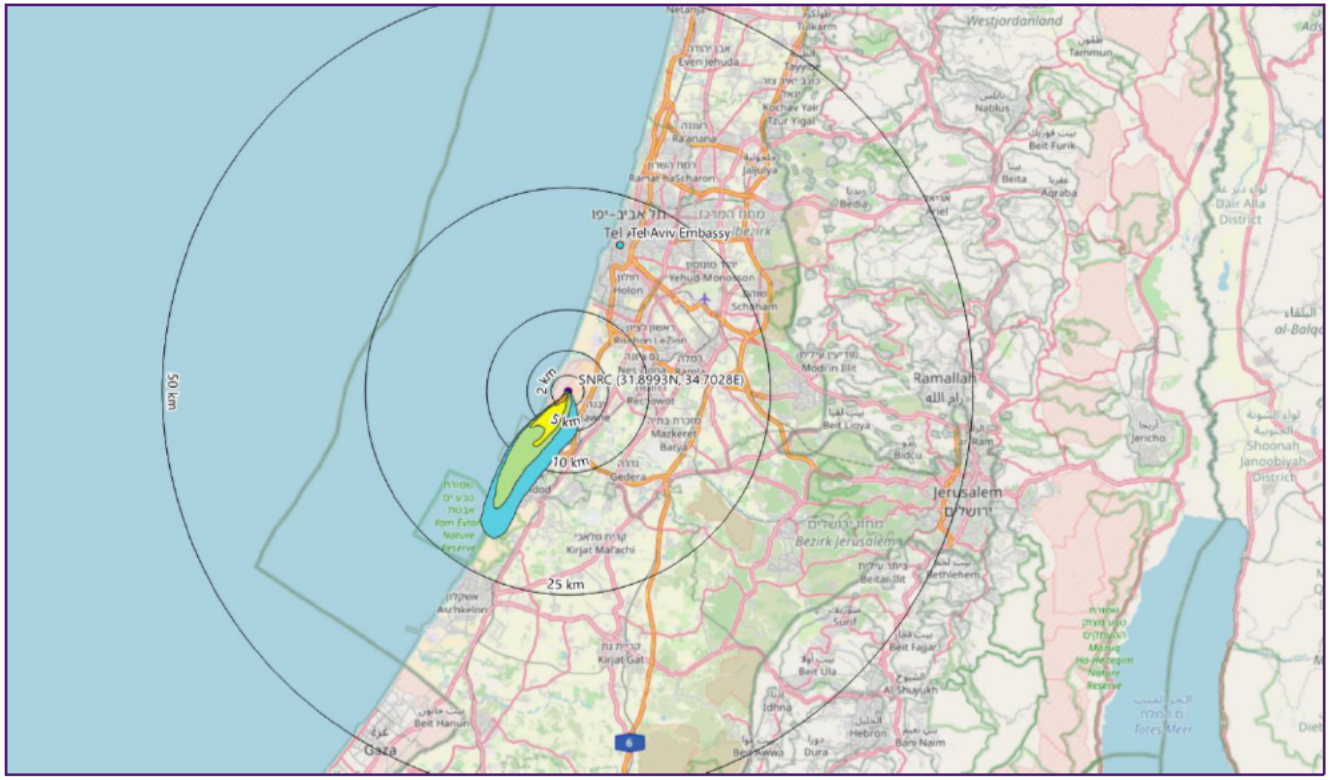
COMMENTS

Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Negev facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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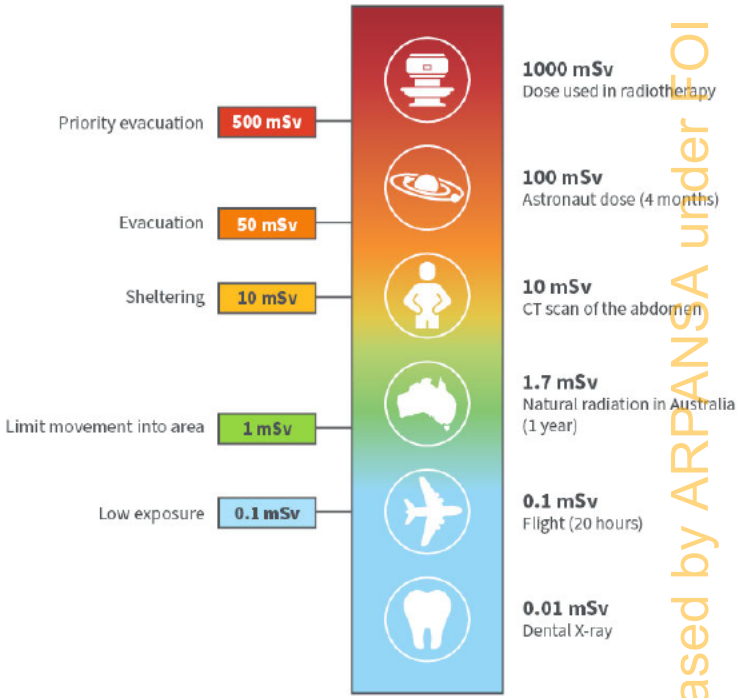
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



Modelled release at 13:00 AEDT 06 March 2026 Model generated at 10:00 AEDT on 06 March 2026 *Figure 4*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction predominantly to the south-west of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km
Sheltering and KI Tablets: May be required up to 10 km
Food and water restrictions: May be required up to 20 km.

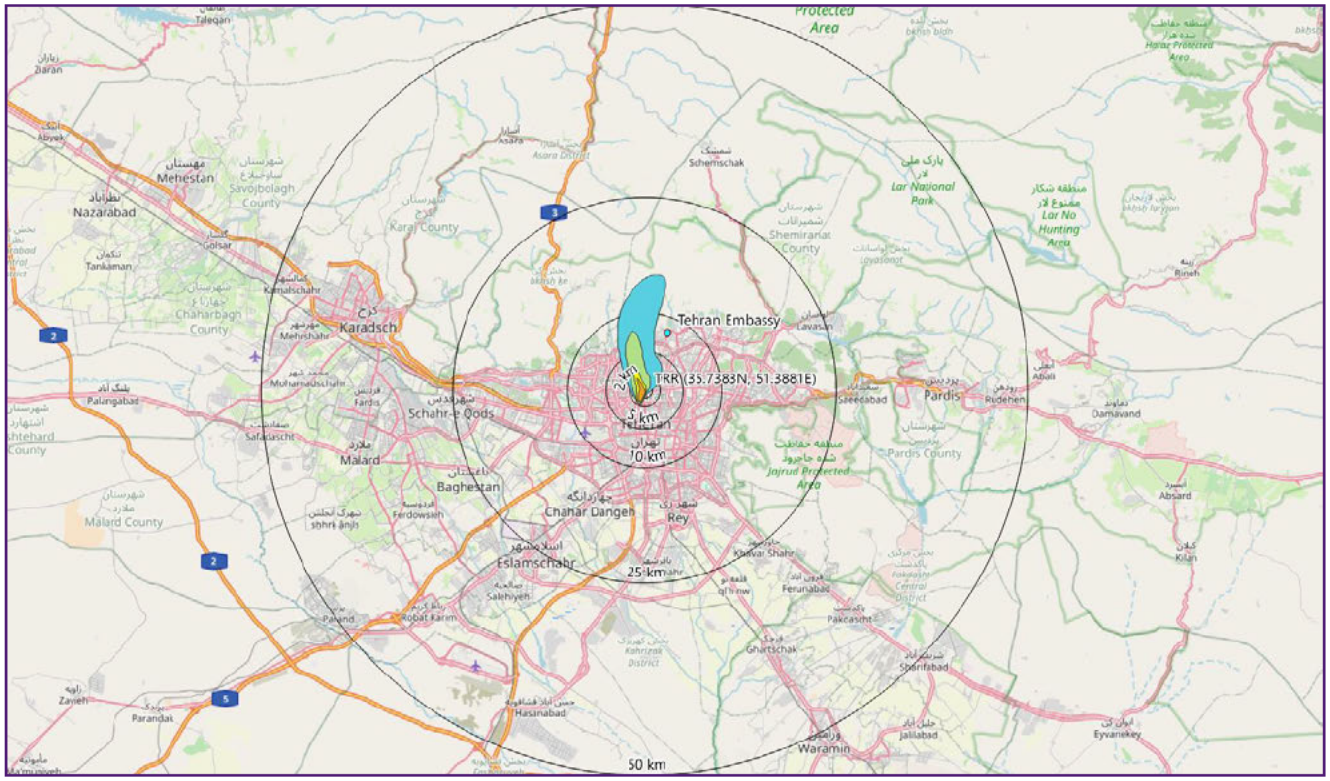
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Soreq facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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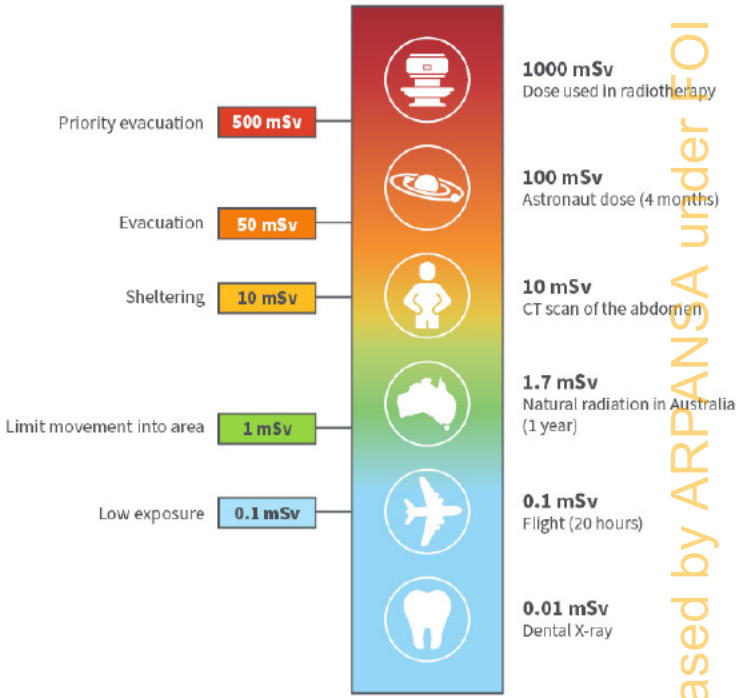
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



Modelled release at 13:00 AEDT 06 March 2026 Model generated at 10:00 AEDT on 06 March 2026 *Figure 5*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north and north-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km from the site
Sheltering and KI Tablets: May be required up to 7 km from the site
Food and water restrictions: May be required up to 10 km from the site.

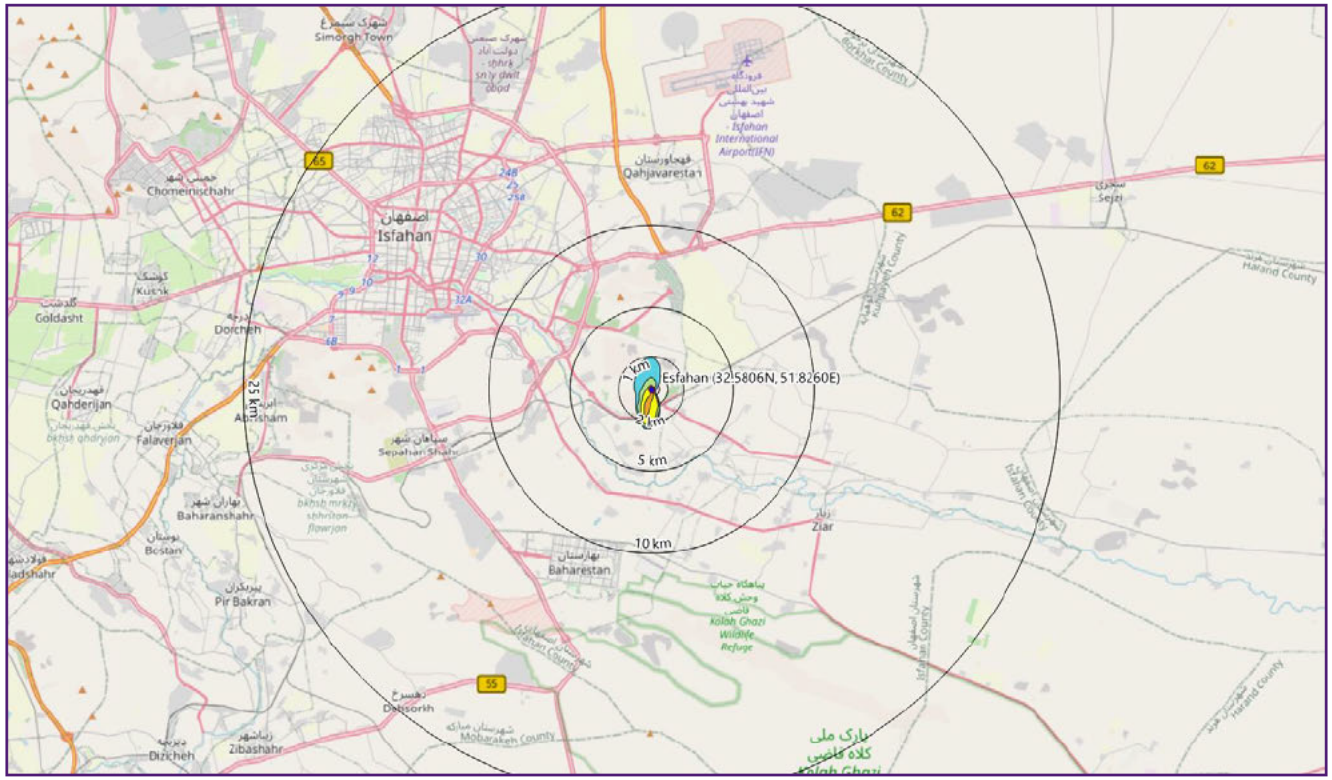
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tehran is very low due to the distance from the Tehran facility. In the event of an incident at this facility protective actions may be required at this embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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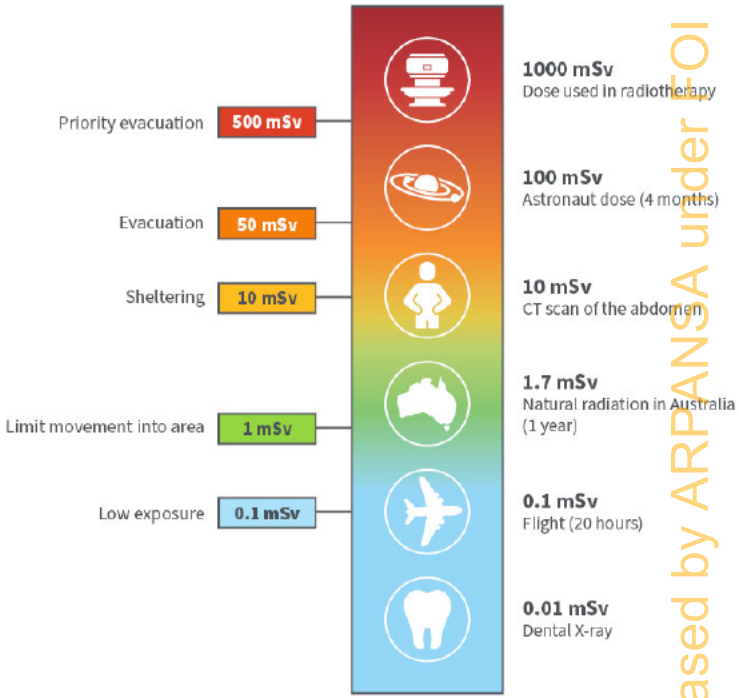
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran



Modelled release at 13:00 AEDT 06 March 2026 Model generated at 10:00 AEDT on 06 March 2026 *Figure 6*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction initially to the south, then a change to the north of the site..

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km from the site
Sheltering: May be required up to 3 km from the site
Food and water restrictions: May be required up to 3 km from the site.

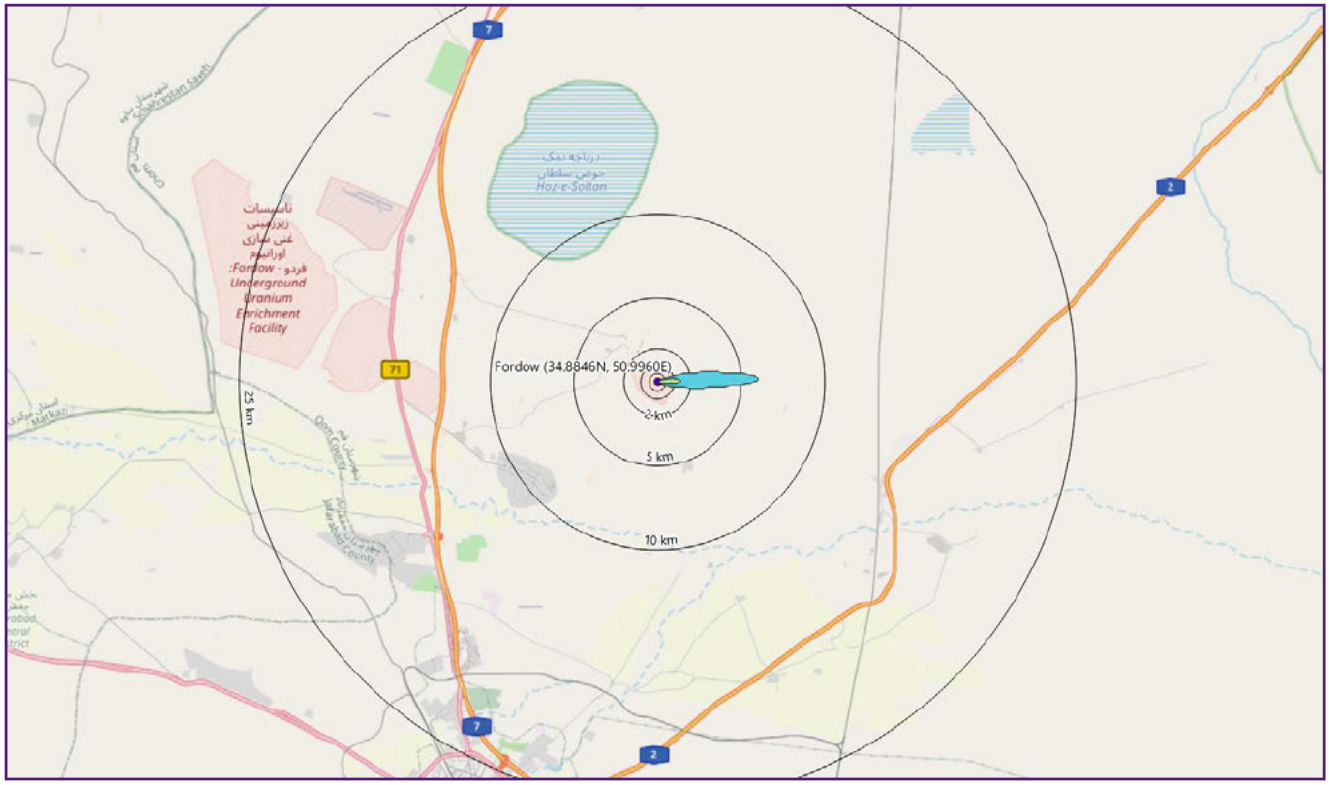
COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

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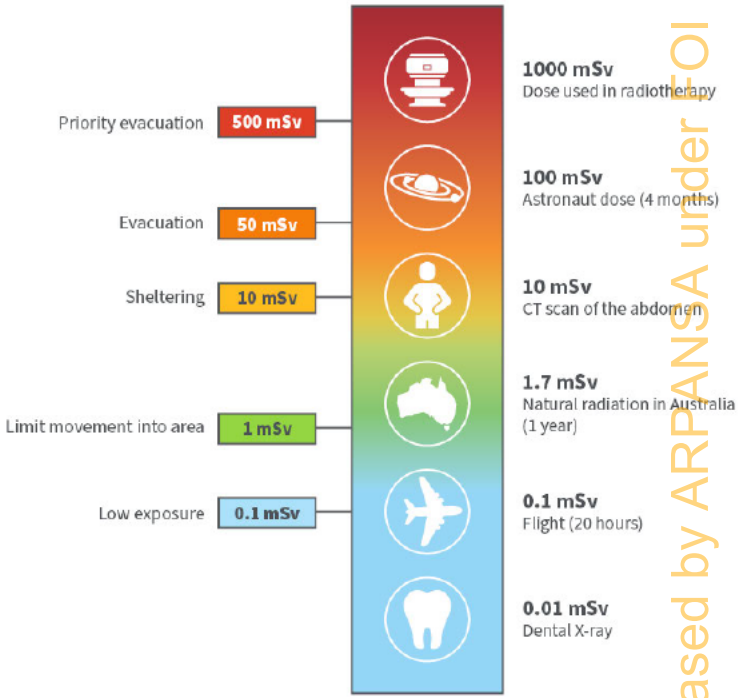
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran



Modelled release at 13:00 AEDT 06 March 2026 Model generated at 10:00 AEDT on 06 March 2026 *Figure 7*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

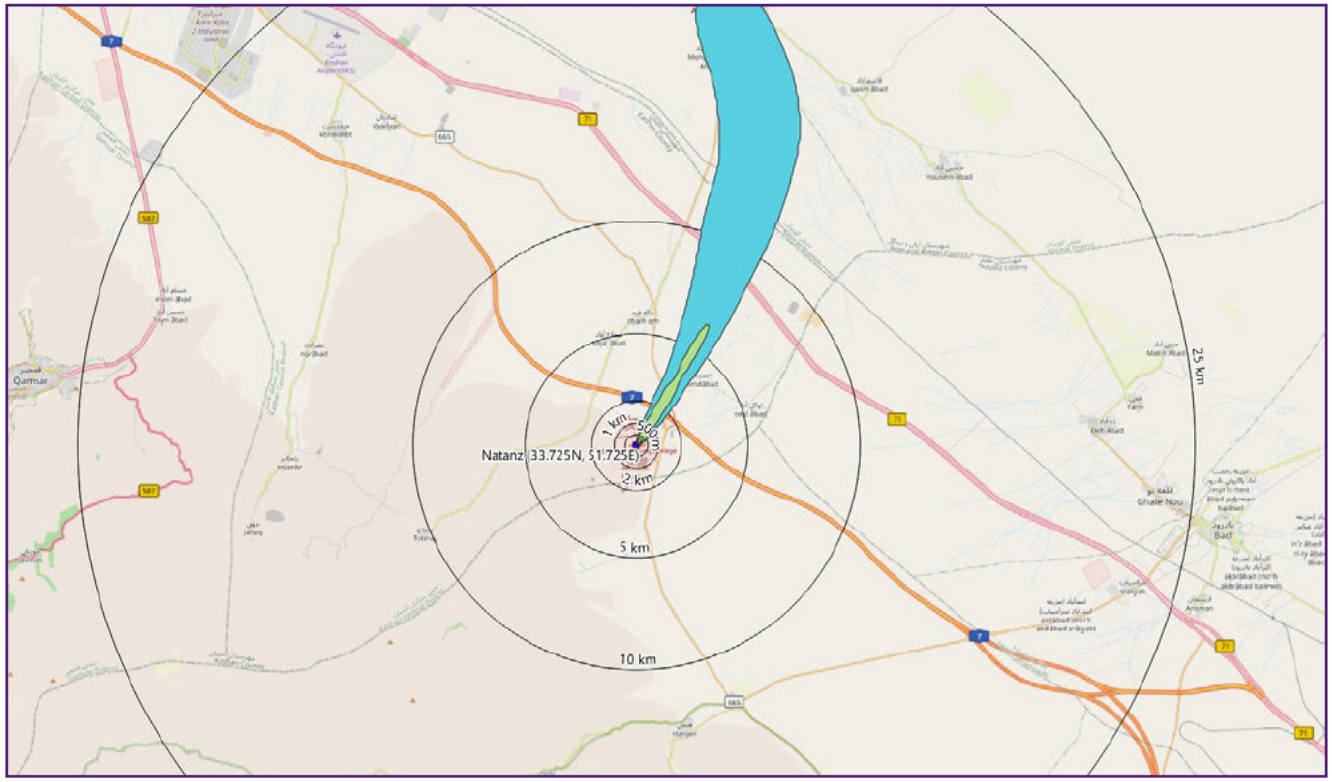
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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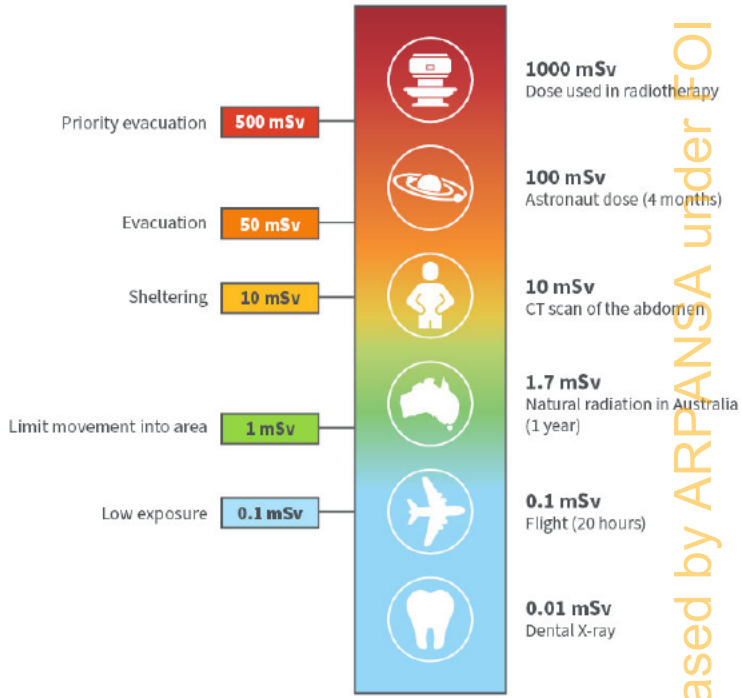
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran



Modelled release at 13:00 AEDT 06 March 2026 Model generated at 10:00 AEDT on 06 March 2026 *Figure 8*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north-east of the site.

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering: May be required up to 1 km from the site
Food and water restrictions: May be required up to 2 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

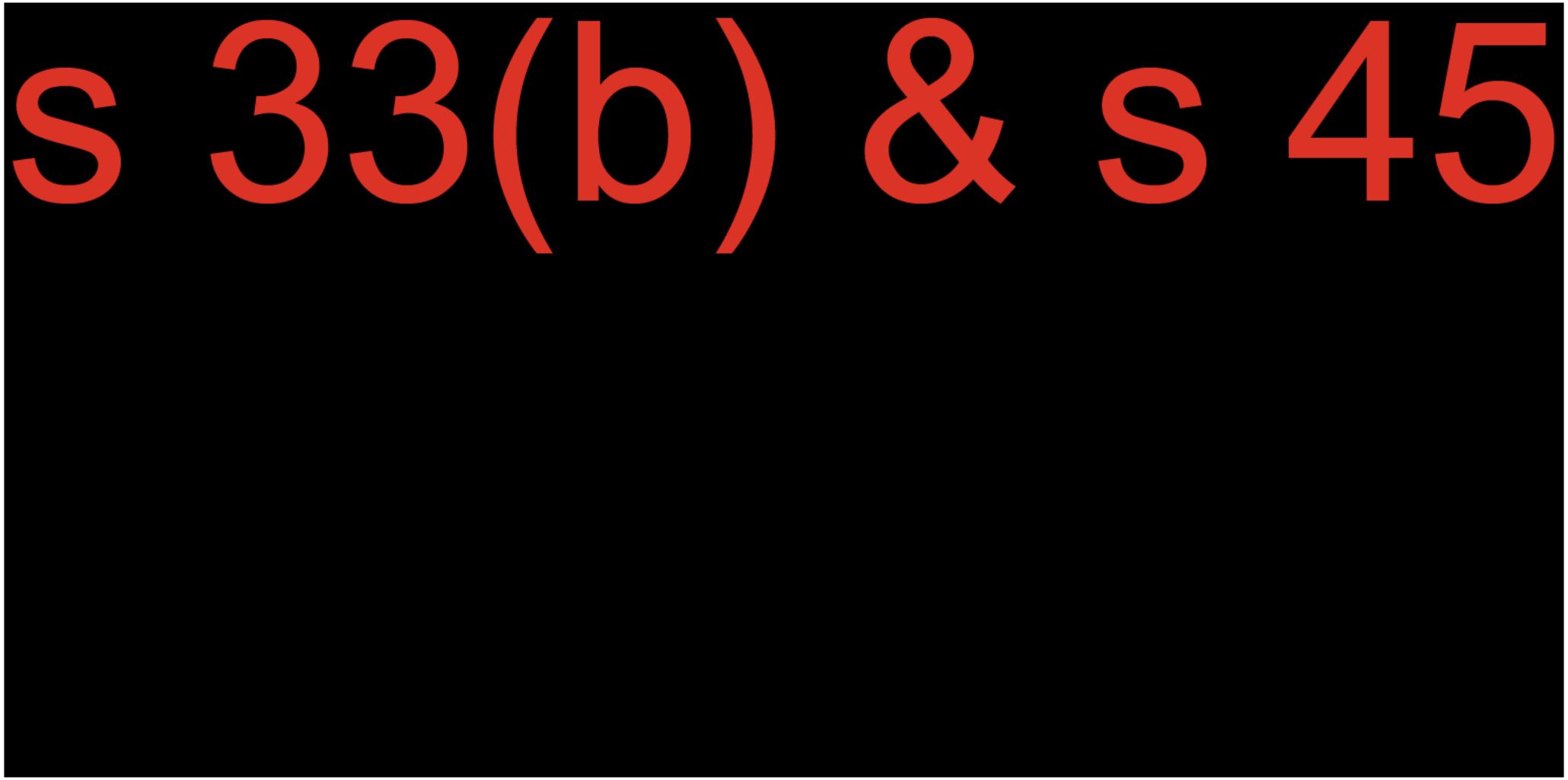


Figure 9 s 33(b) & s 45

International Radiation Monitoring Information System (IRMIS)

This network is designed to provide near real-time information and can be used to inform urgent protective actions.

A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency.

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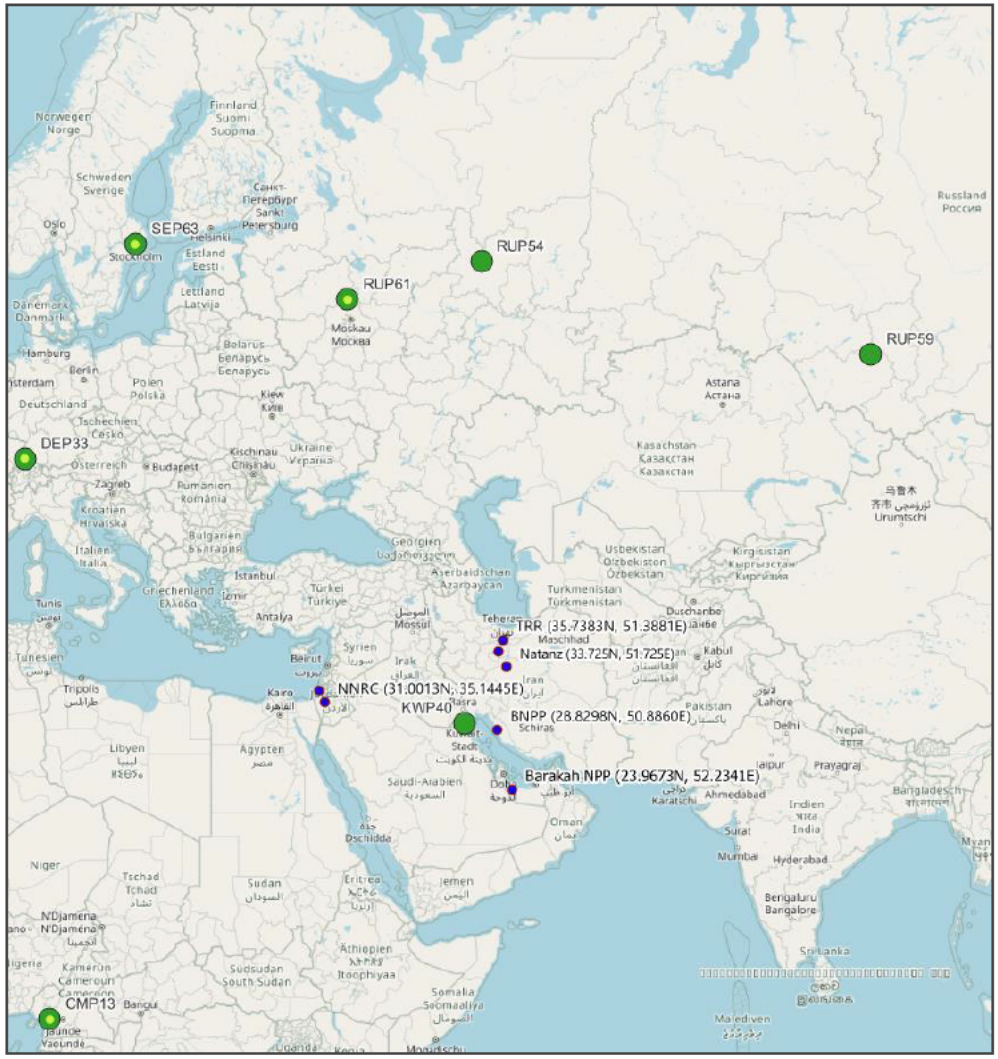


Figure 10 Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System (IMS) radionuclide detection network

International Monitoring System (IMS)

The International Monitoring System is a comprehensive global network of detectors that includes seismic, hydroacoustic, infrasound and radionuclide stations. This network is managed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and is designed to detect clandestine nuclear explosions. The IMS is more sensitive than the IRMIS network and provides different information.

The radionuclide stations in the network can detect very low levels of radiation in the atmosphere. The closest radionuclide station in the region is located in Kuwait City, with other relevant stations in Switzerland, Russia, China, Mongolia, and the British Indian Ocean Territory.

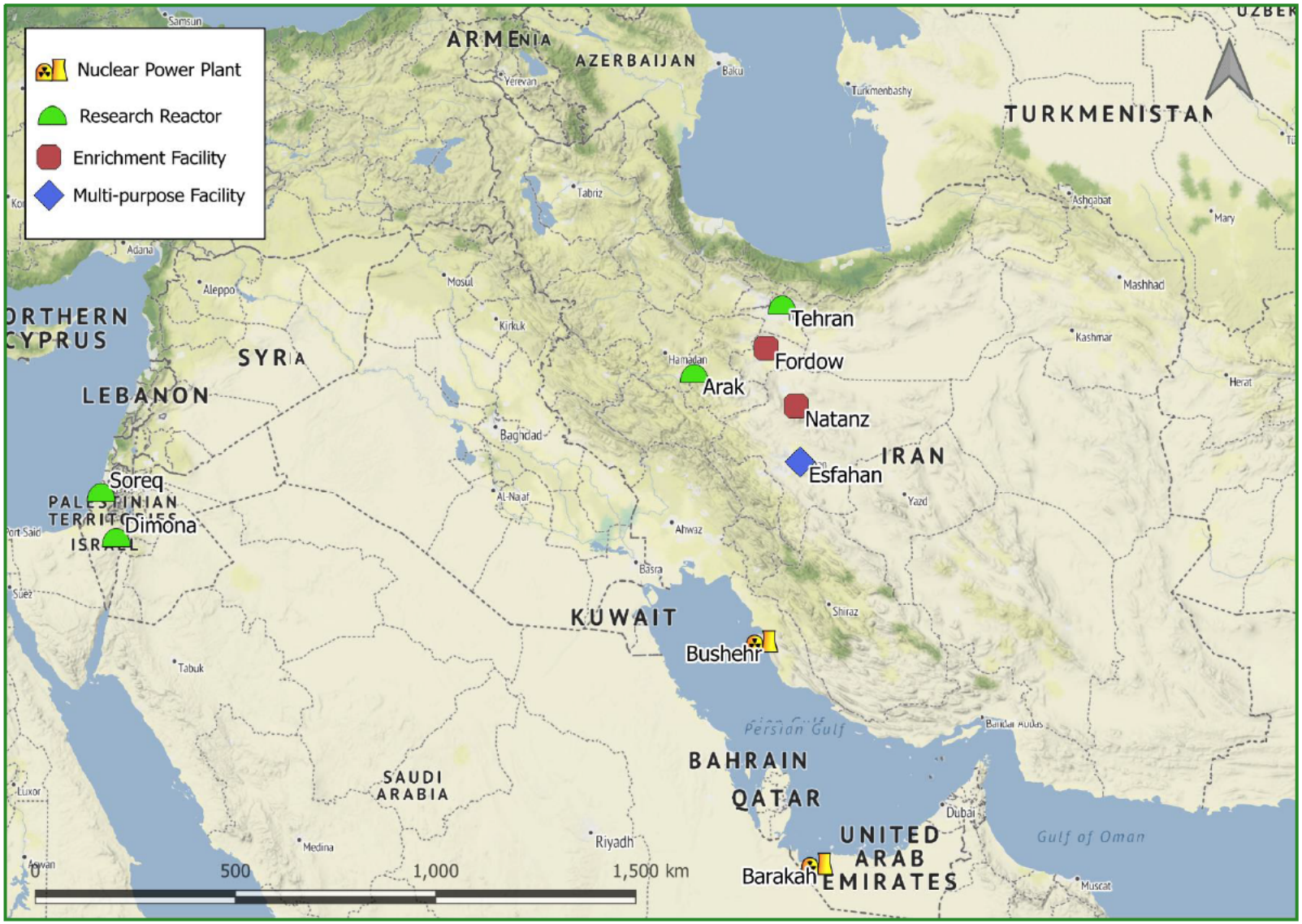
The system is highly effective, having detected all six of North Korea's declared nuclear tests between 2006 and 2017. The network also provided valuable information during the Fukushima nuclear accident, with measurements from stations in Japan helping to identify and quantify the amount of radioactive material that reached certain locations.

If there was a significant release from a nuclear reactor, it would be detected by the IMS network. However, the measurement process takes several days, so these stations do not provide an early warning system of a nuclear incident or provide real-time measurements to help inform urgent protective actions.

ARPANSA acknowledges ASNO as the National Authority under Article 3 of the CTBT for the release of IMS data.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE



Locations of nuclear facilities in Iran and Israel, and United Arab Emirates

Figure 11

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

SITUATION UPDATE

Time/date of this report: 10 March 2026 at 10:00 AEDT

On 28 February 2026, Israel and the United States of America conducted a strike on Iranian targets in Tehran and other regional cities. Iran retaliated against Israel, regional American military assets, and against the Gulf States that host U.S. forward bases. Both sides of the conflict continue to conduct military strikes.

Sites related to Iran's nuclear program have reportedly been struck including the Natanz Nuclear Facility on 1 March 2026. The IAEA has acknowledged the strikes but confirmed there were no indications of radioactive releases. The Esfahan (Isfahan) Nuclear Technology/Research Centre and Fordow sites were previously struck. Modelling indicates that off-site radiological consequences from an incident at these sites are not significant.

Iran has also reported strikes on 7 March 2026 affecting a gamma irradiation facility in the Esfahan province, although no off-site radioactive contamination was detected. These types of facilities are used for sterilisation of microorganisms in medical devices, pharmaceuticals, or food products. They typically contain a high activity gamma source such as Cobalt-60. A release of this radioactive material could require off-site protective actions including relocation close to the site or food restrictions up to 20 km from the site.

Strikes occurring in Tehran are not reported to have struck the research reactor in Tehran. Should the research reactor be struck, it poses a low risk due to the small inventory and power output of the academic research reactor.

Israel also has several nuclear facilities, including the Negev (also called Dimona) Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. The Negev reactor is reported to be of higher power output than the Soreq facility. Iran has recently (5 March) threatened to strike the Negev Nuclear Facility should the U.S. seek regime change in Iran.

Reporting indicates that regional nuclear power plants in Bushehr (Iran) and Barakah (UAE) have not been targeted by the strikes.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

KEY MESSAGES

- Since 28 February 2026 Iran and Israel/The United States have been at war and actively launching drones and missiles.
- A gamma irradiation facility in Esfahan province in Iran was reportedly affected by strikes, although no off-site contamination was detected. A release of radioactive material from this type of facility may require off-site protective actions such as relocation close to the site or food and drinking water restrictions up to 20 km from the site.
- Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. It is unlikely that any urgent protective actions would be required at the embassy locations.
- In a worst-case event, embassy staff may be instructed to shelter in place with doors and windows sealed and await further advice.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

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Protective actions that may be required following an incident at the Nuclear Power Plant

Should there be a large release of radioactive material from the Nuclear Power Plant in the region (Bushehr or Barakah), radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local directions: Follow local directions for protective actions such as evacuation.

ARPANSA assessment indicates that protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

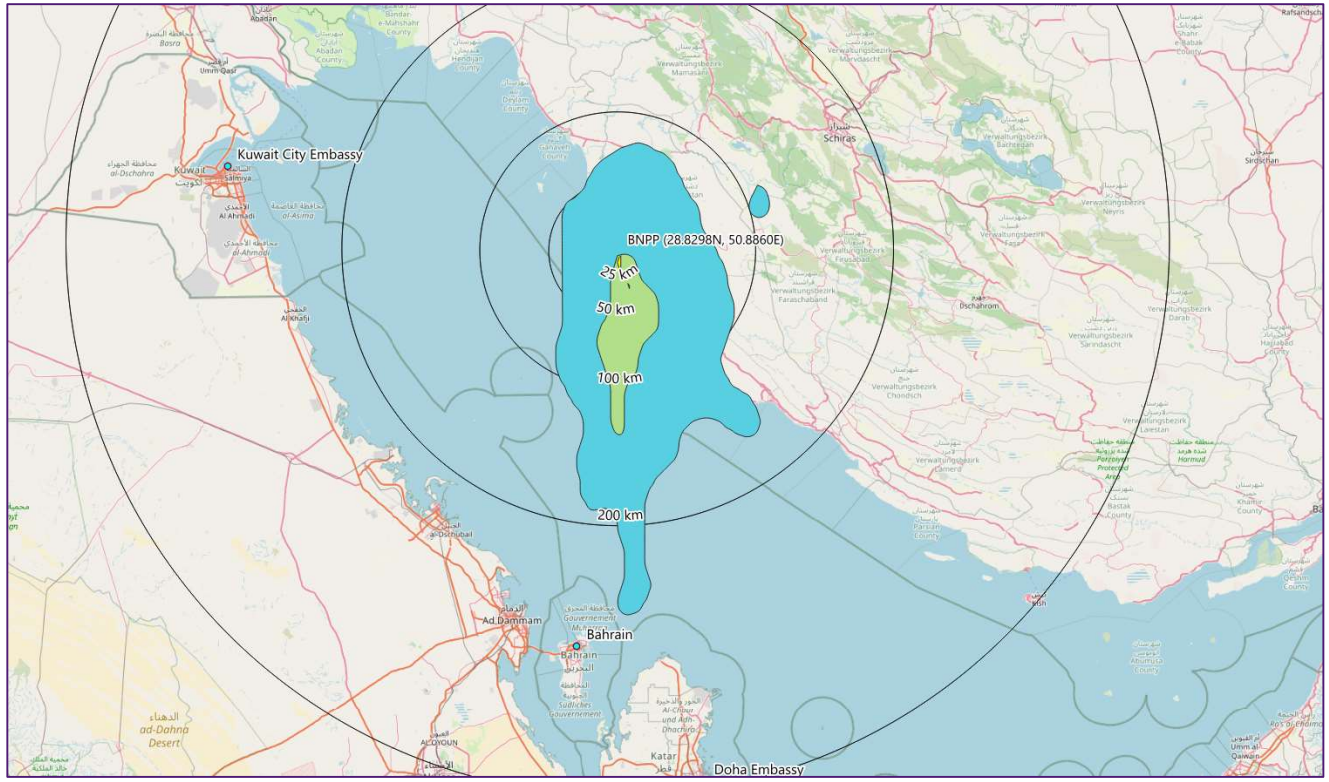
Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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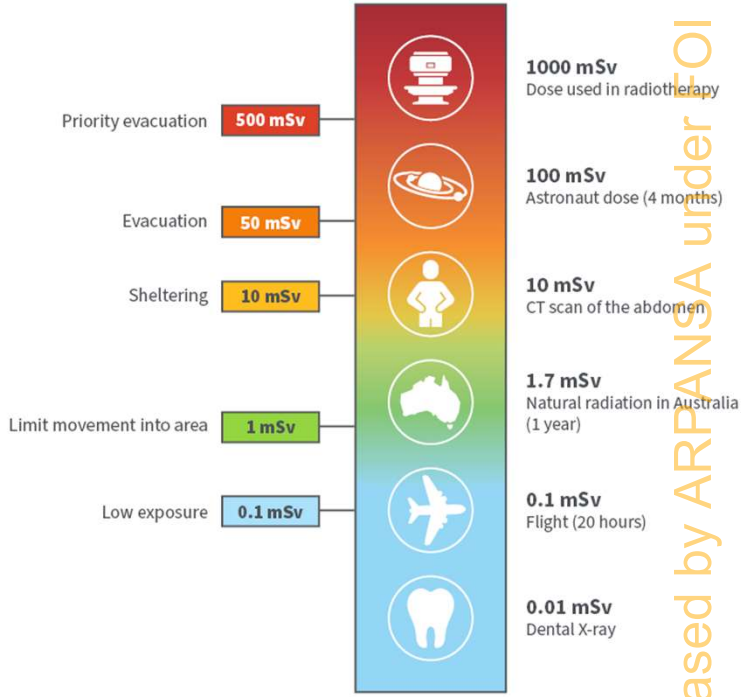
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran



Modelled release at 13:00 AEDT 10 March 2026 Model generated at 10:00 AEDT on 10 March 2026 *Figure 1*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

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RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 3000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows predominant plume direction to the south of the site

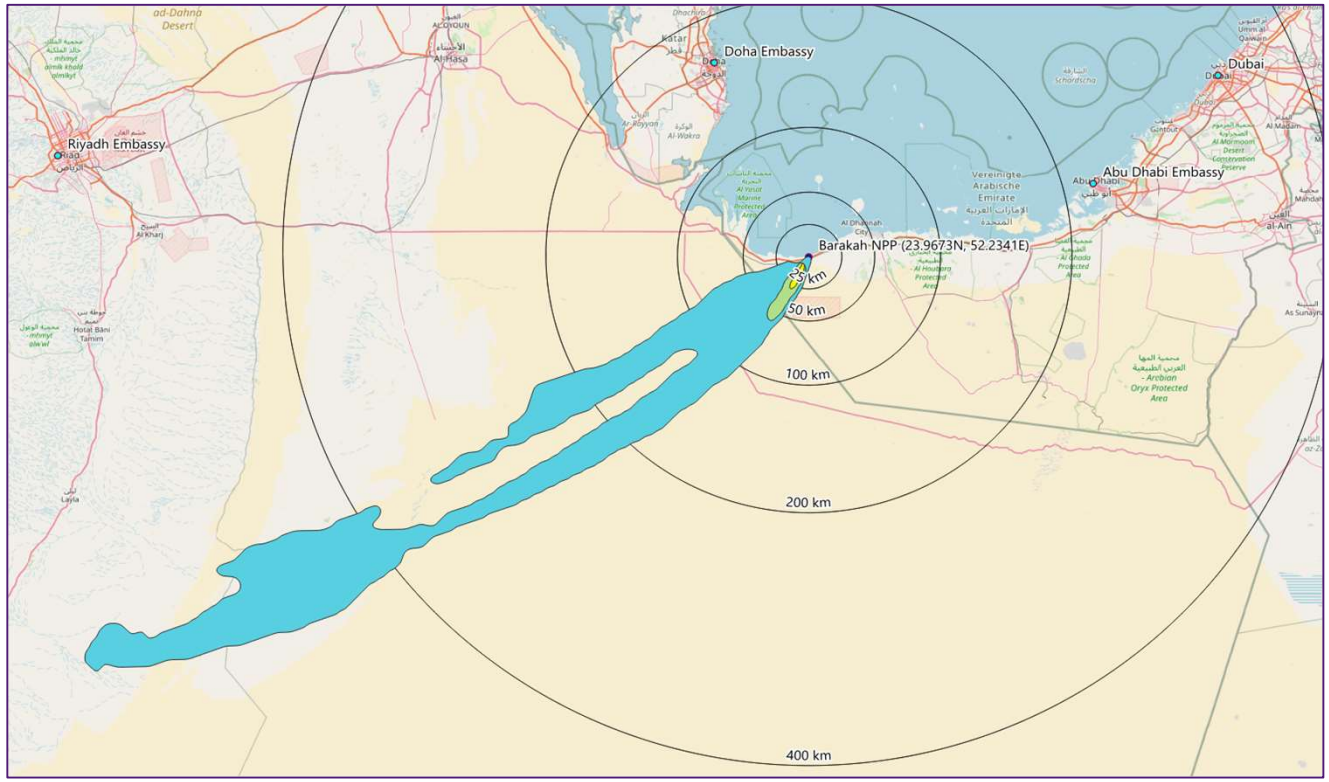
Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 70km from the site
Food and water restrictions: May be required up to 100km from the site

COMMENTS

Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

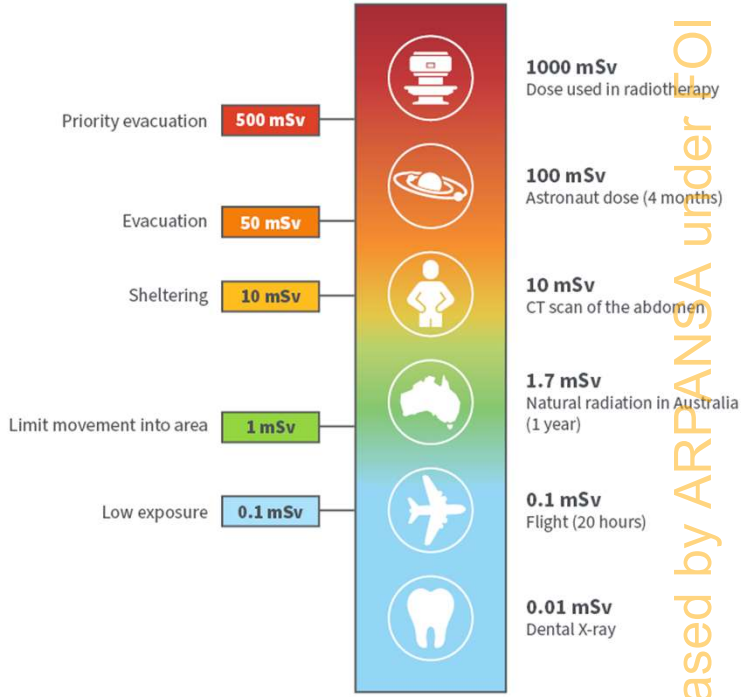
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Barakah Nuclear Power Plant in UAE



Modelled release at 13:00 AEDT 10 March 2026 Model generated at 10:00 AEDT on 10 March 2026 *Figure 2*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 4000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south-west of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 70 km from the site
Food and water restrictions: May be required up to 100 km from the site

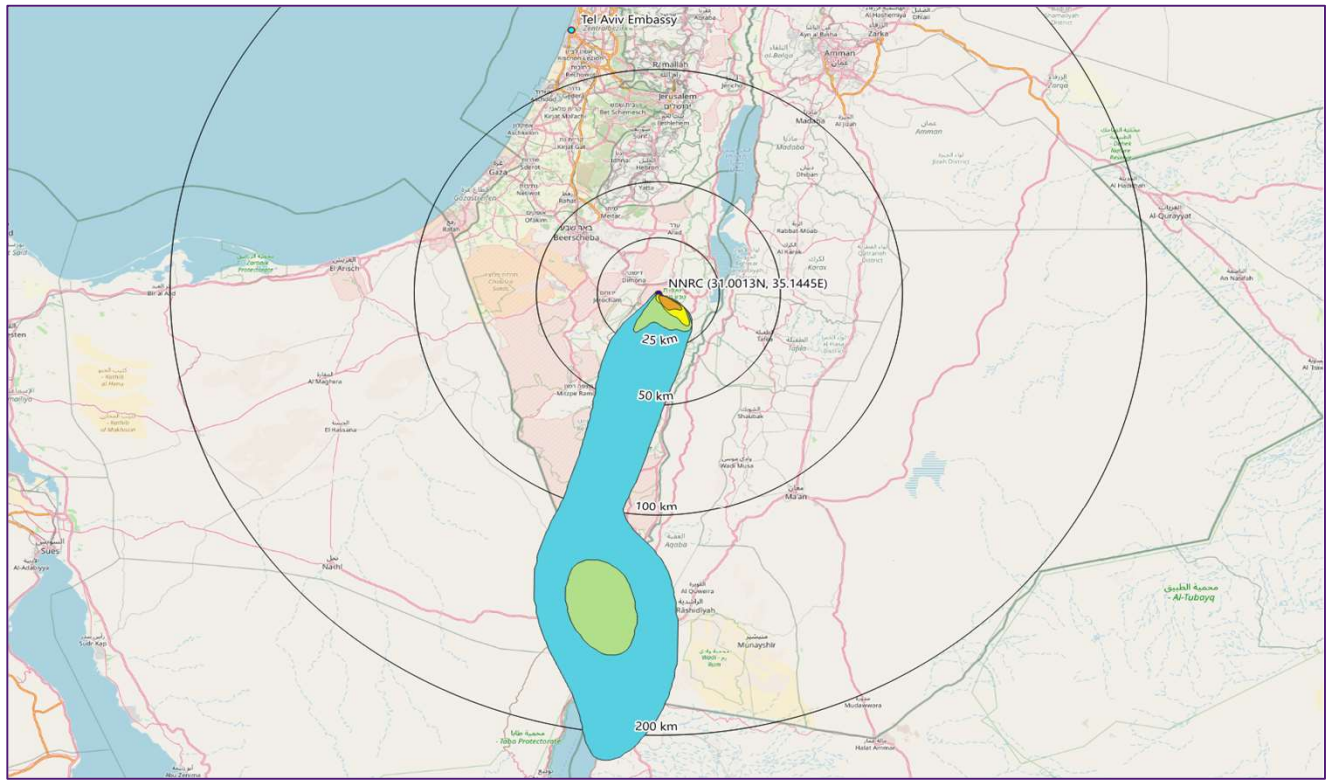
COMMENTS

Radiological risk at Australian embassy locations in Abu Dhabi, Dubai, Doha, Riyadh, and Bahrain is very low due to the distance from the Barakah facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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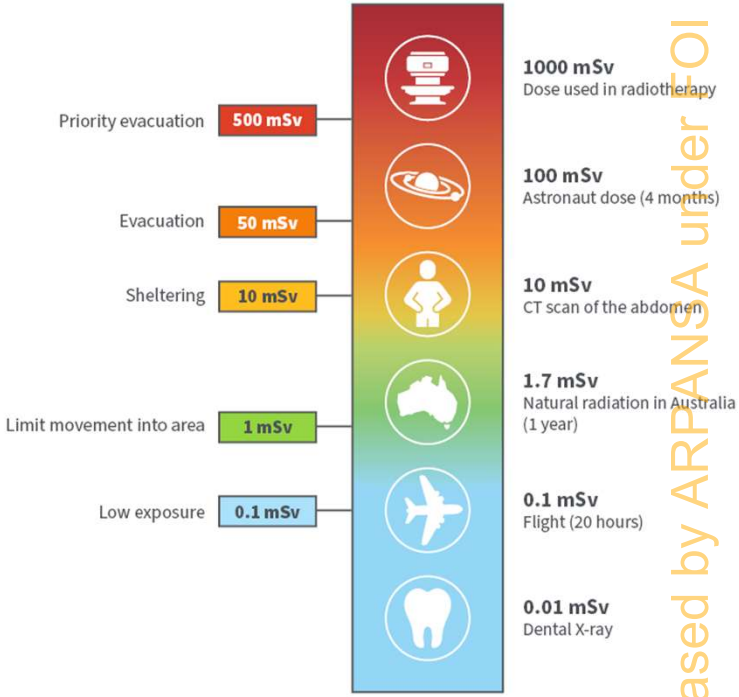
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Dimona, Israel



Modelled release at 13:00 AEDT 10 March 2026 Model generated at 10:00 AEDT on 10 March 2026 *Figure 3*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

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RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction initially to the south-east and east of the site, and then a change to the south.

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 10 km from the site
Sheltering and KI Tablets: May be required up to 20 km from the site
Food and water restrictions: May be required up to 30 km from the site

COMMENTS

Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Negev facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

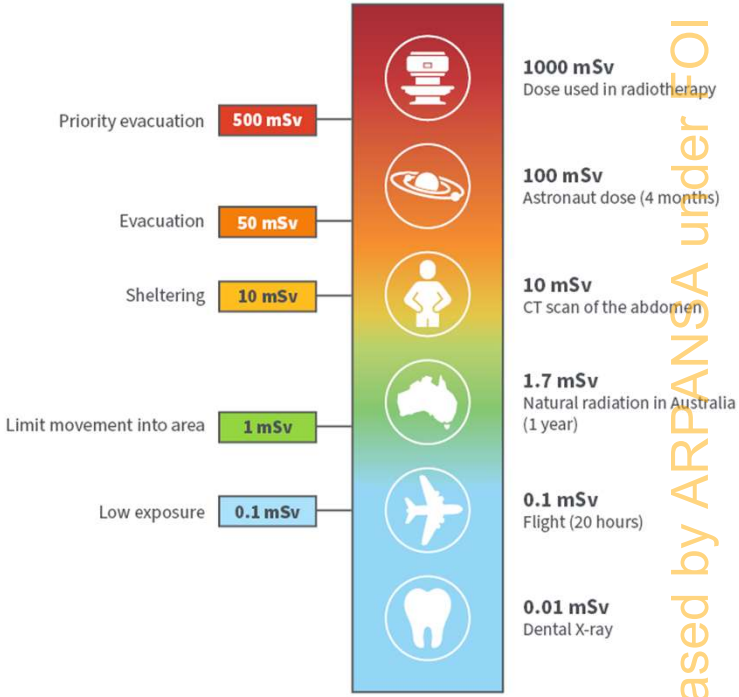
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



Modelled release at 13:00 AEDT 10 March 2026 Model generated at 10:00 AEDT on 10 March 2026 *Figure 4*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction predominantly to the west and north-west of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km
Sheltering and KI Tablets: May be required up to 10 km
Food and water restrictions: May be required up to 20 km.

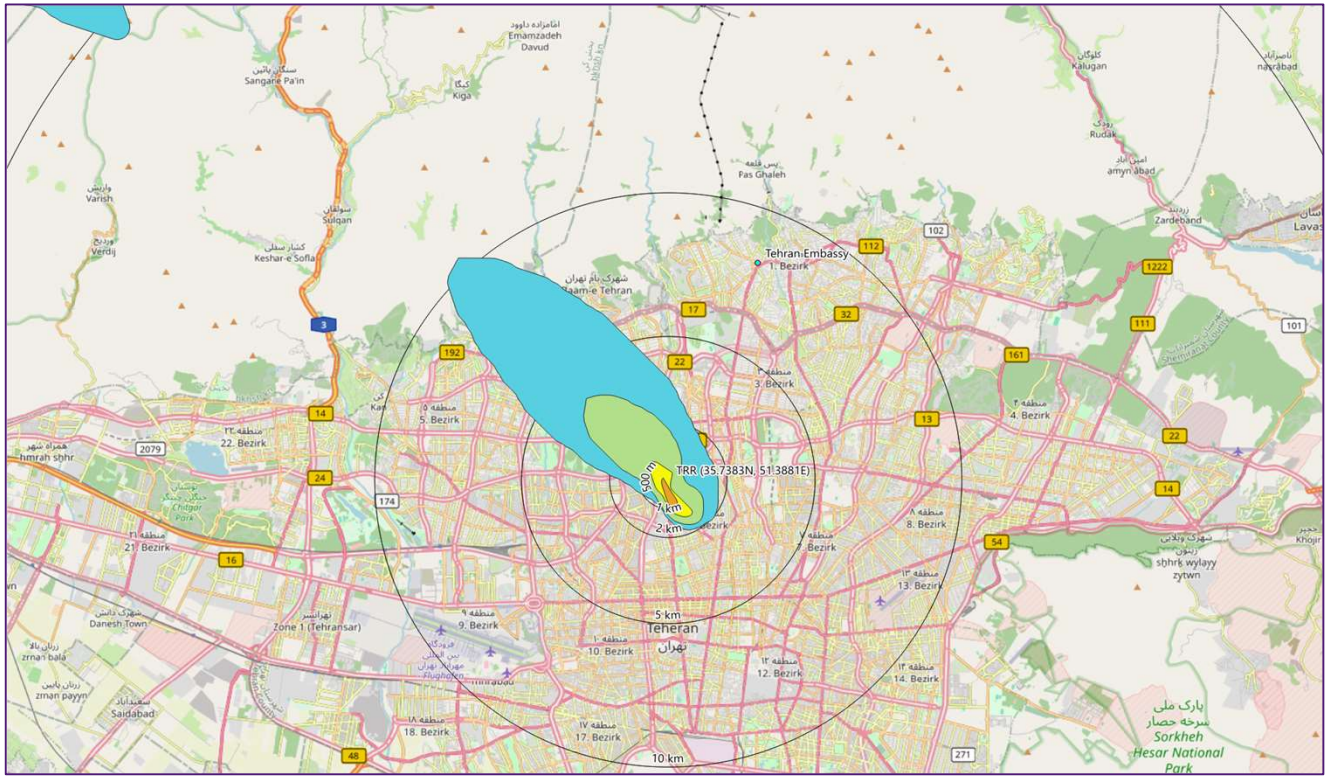
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Soreq facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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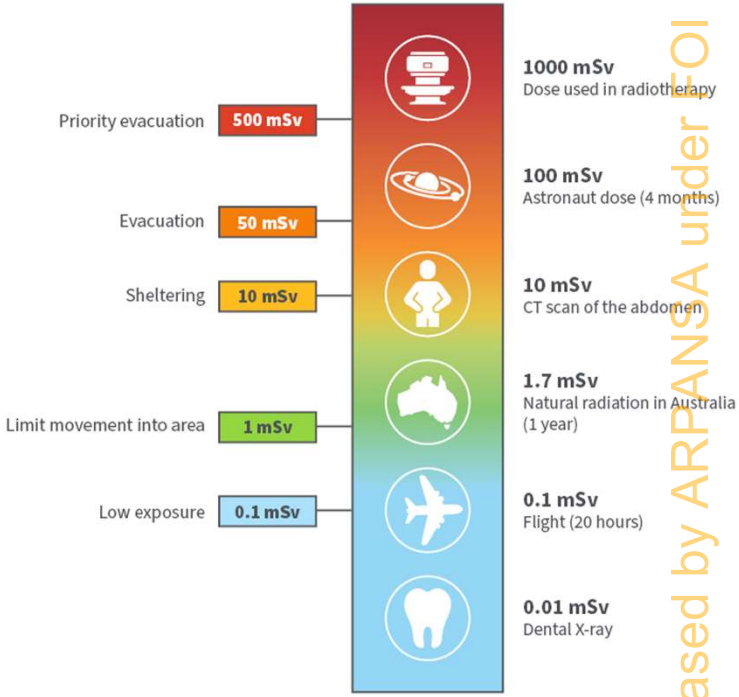
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



Modelled release at 13:00 AEDT 10 March 2026 Model generated at 10:00 AEDT on 10 March 2026 *Figure 5*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

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RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north and north-west of the site

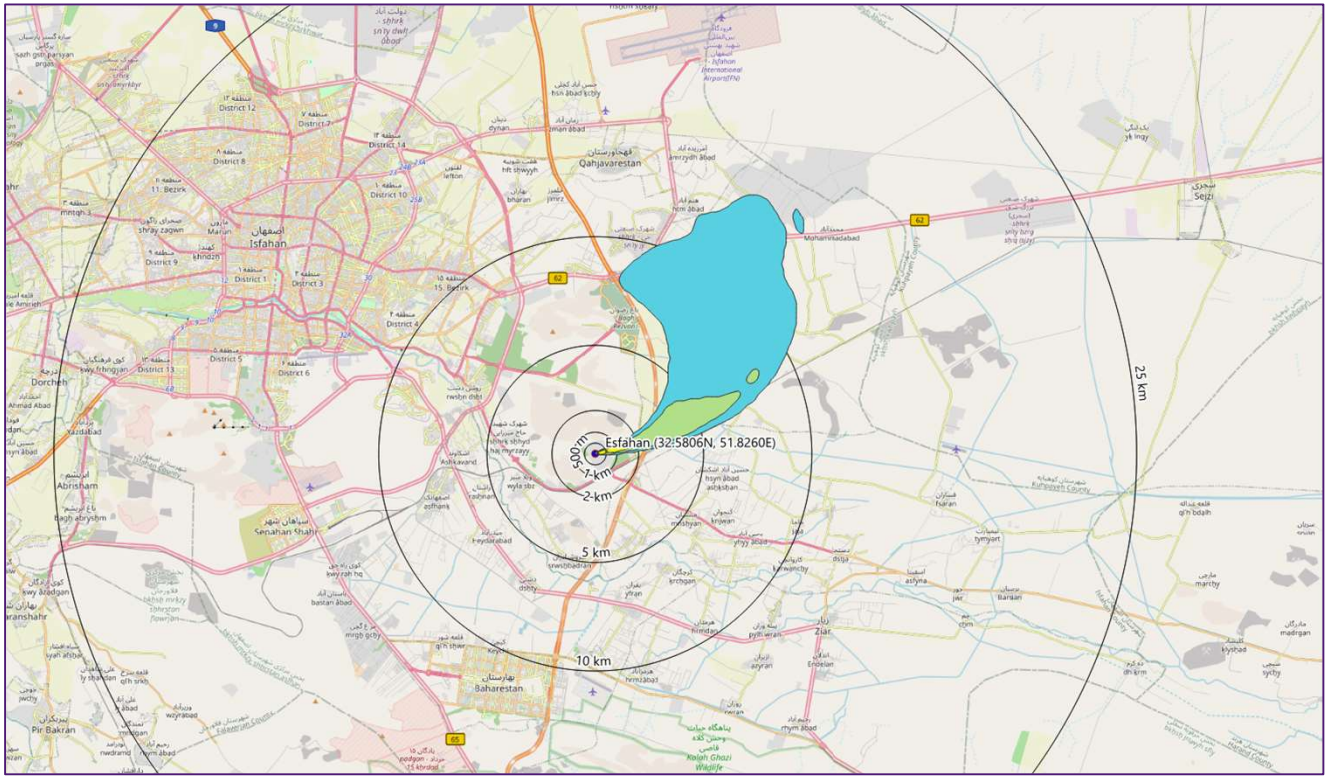
Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km from the site
Sheltering and KI Tablets: May be required up to 5 km from the site
Food and water restrictions: May be required up to 10 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tehran is very low due to the distance from the Tehran facility. In the event of an incident at this facility protective actions may be required at this embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

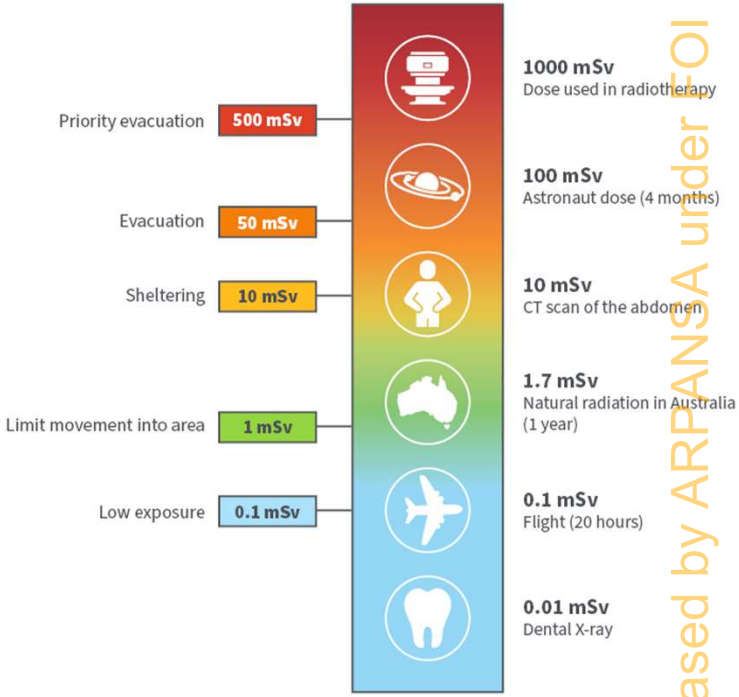
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran



Modelled release at 13:00 AEDT 10 March 2026 Model generated at 10:00 AEDT on 10 March 2026 *Figure 6*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east and north-east of the site.

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km from the site
Sheltering: May be required up to 3 km from the site
Food and water restrictions: May be required up to 3 km from the site.

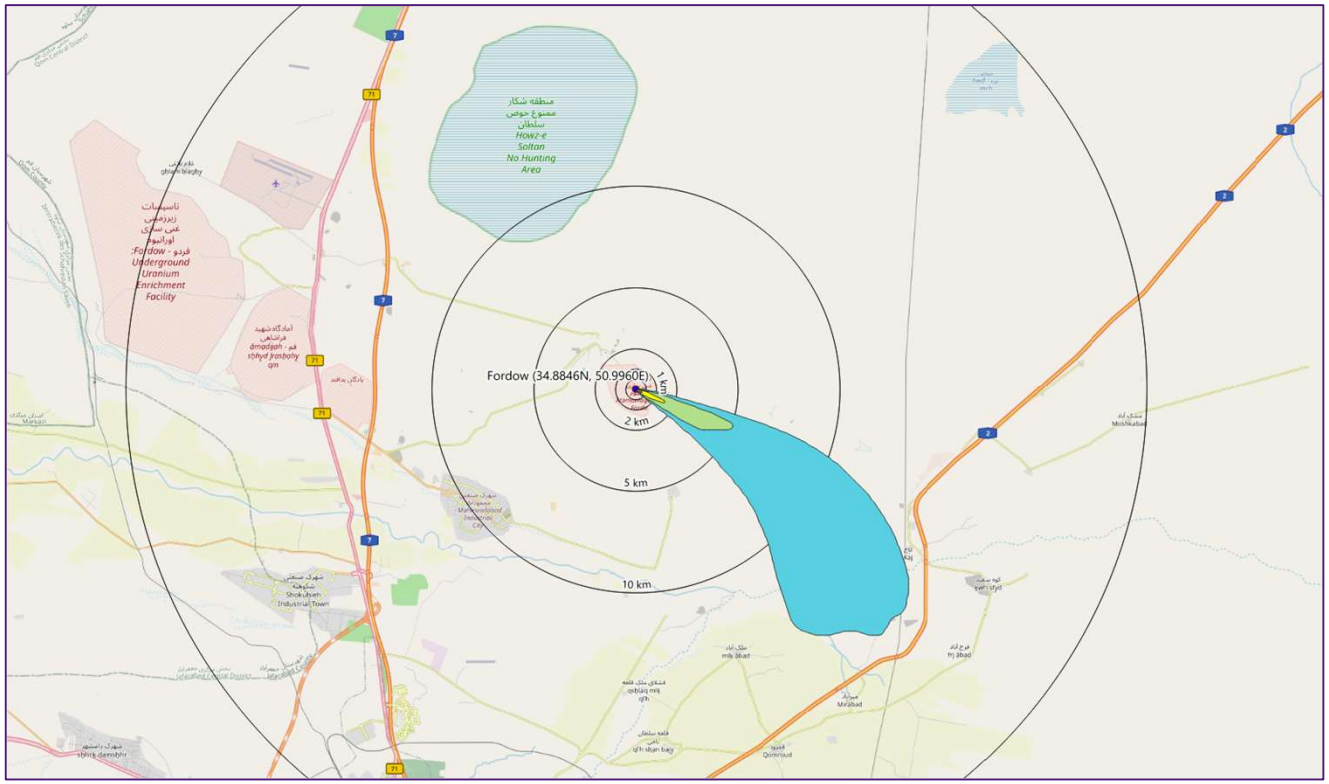
COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

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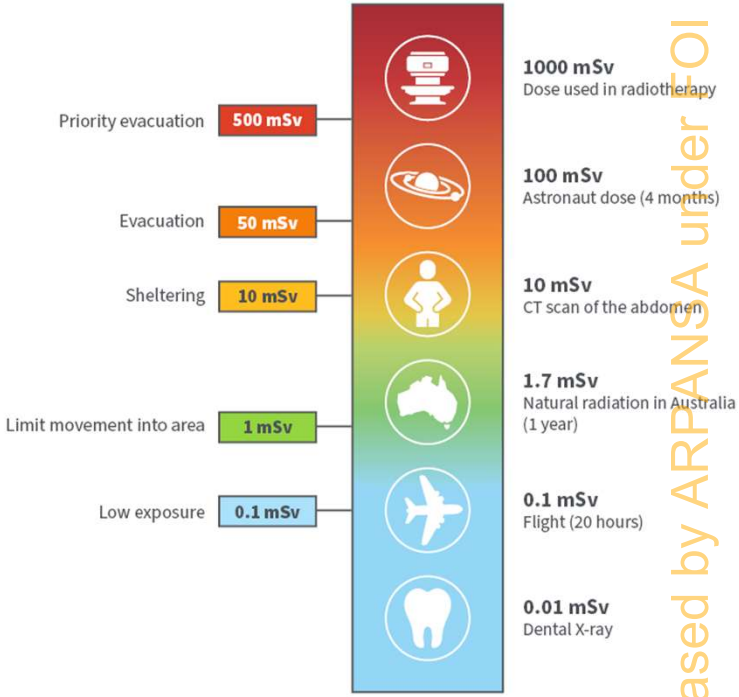
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran



Modelled release at 13:00 AEDT 10 March 2026 Model generated at 10:00 AEDT on 10 March 2026 *Figure 7*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

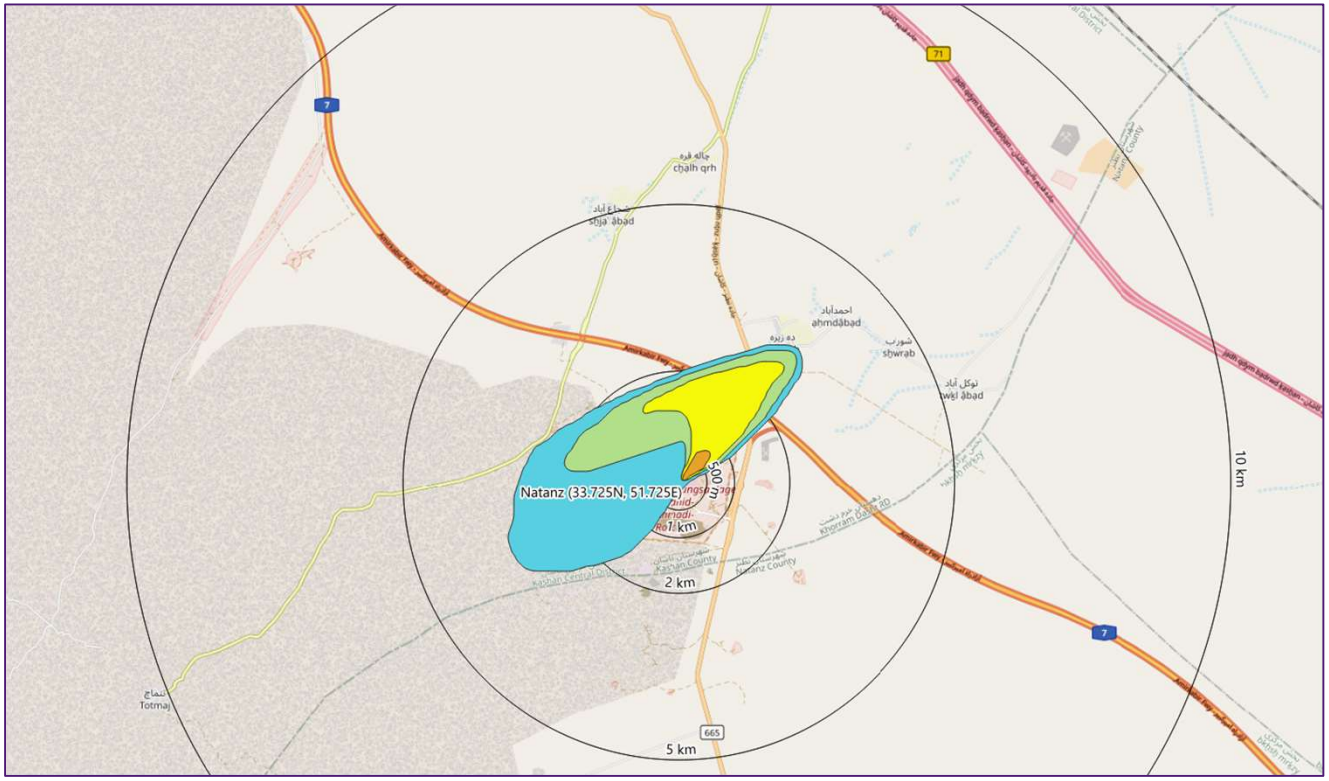
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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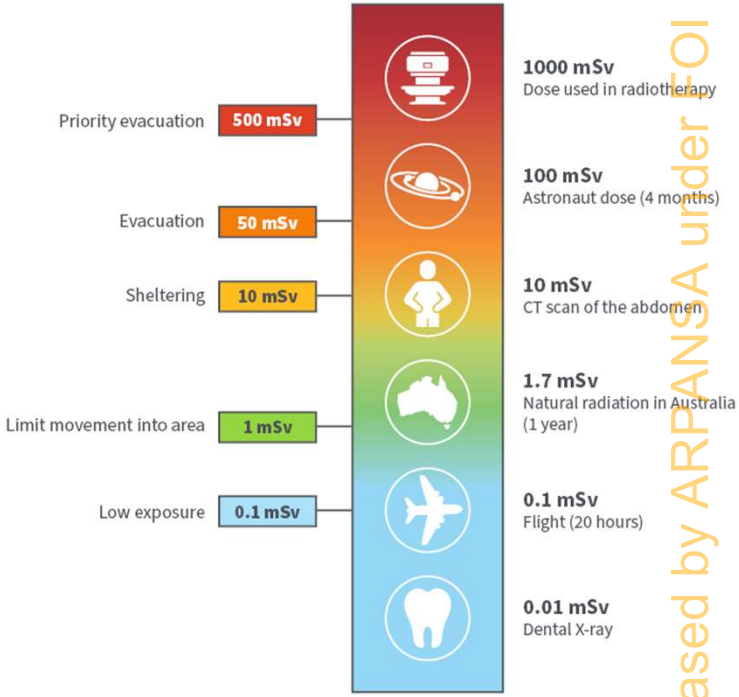
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran



Modelled release at 13:00 AEDT 10 March 2026 Model generated at 10:00 AEDT on 10 March 2026 *Figure 8*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction initially to the north and north-east, then a change to the west of the site.

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required off-site
Sheltering: May be required up to 3 km from the site
Food and water restrictions: May be required up to 2 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

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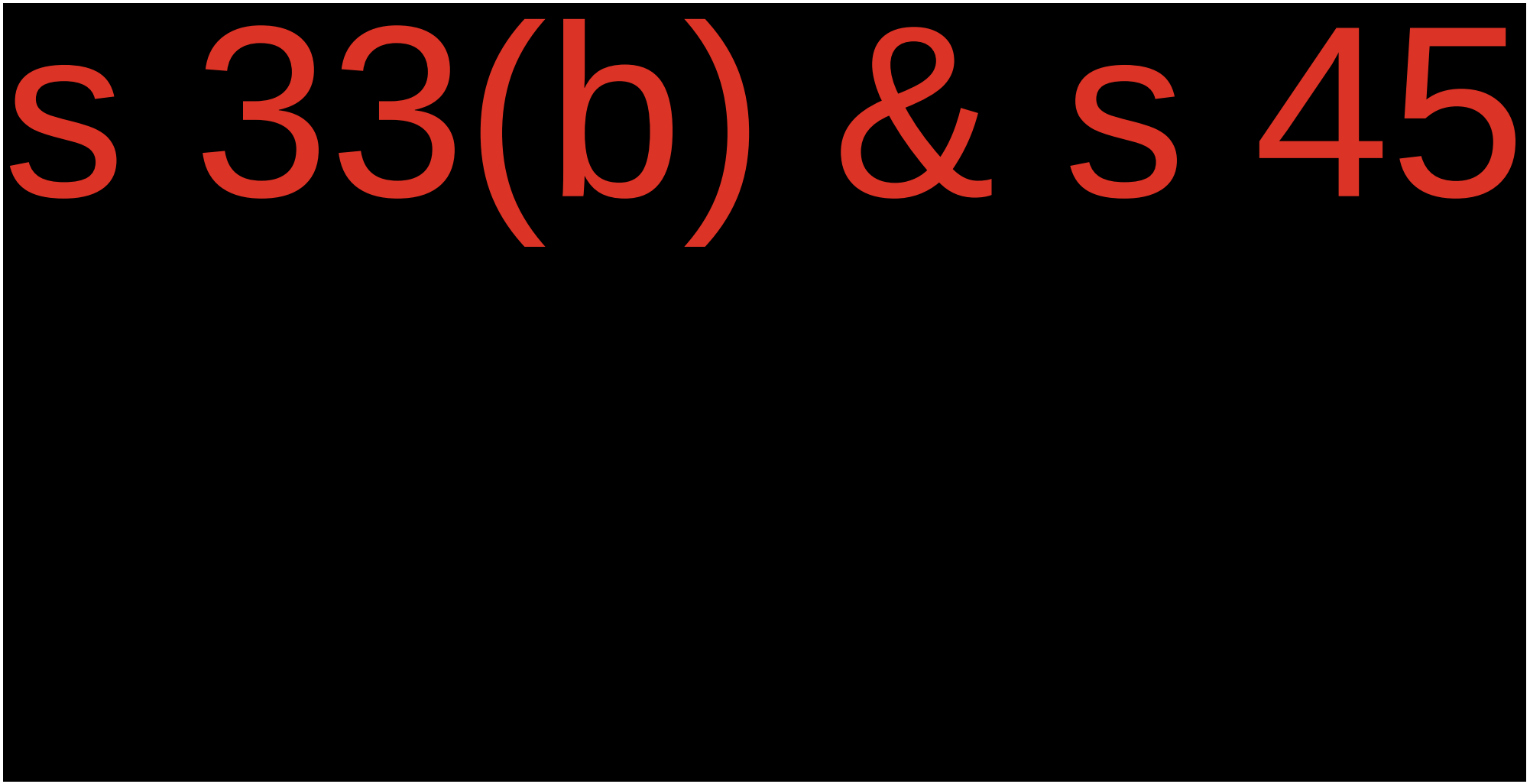


Figure 9 s 33(b) & s 45

International Radiation Monitoring Information System (IRMIS)

This network is designed to provide near real-time information and can be used to inform urgent protective actions.

A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency.

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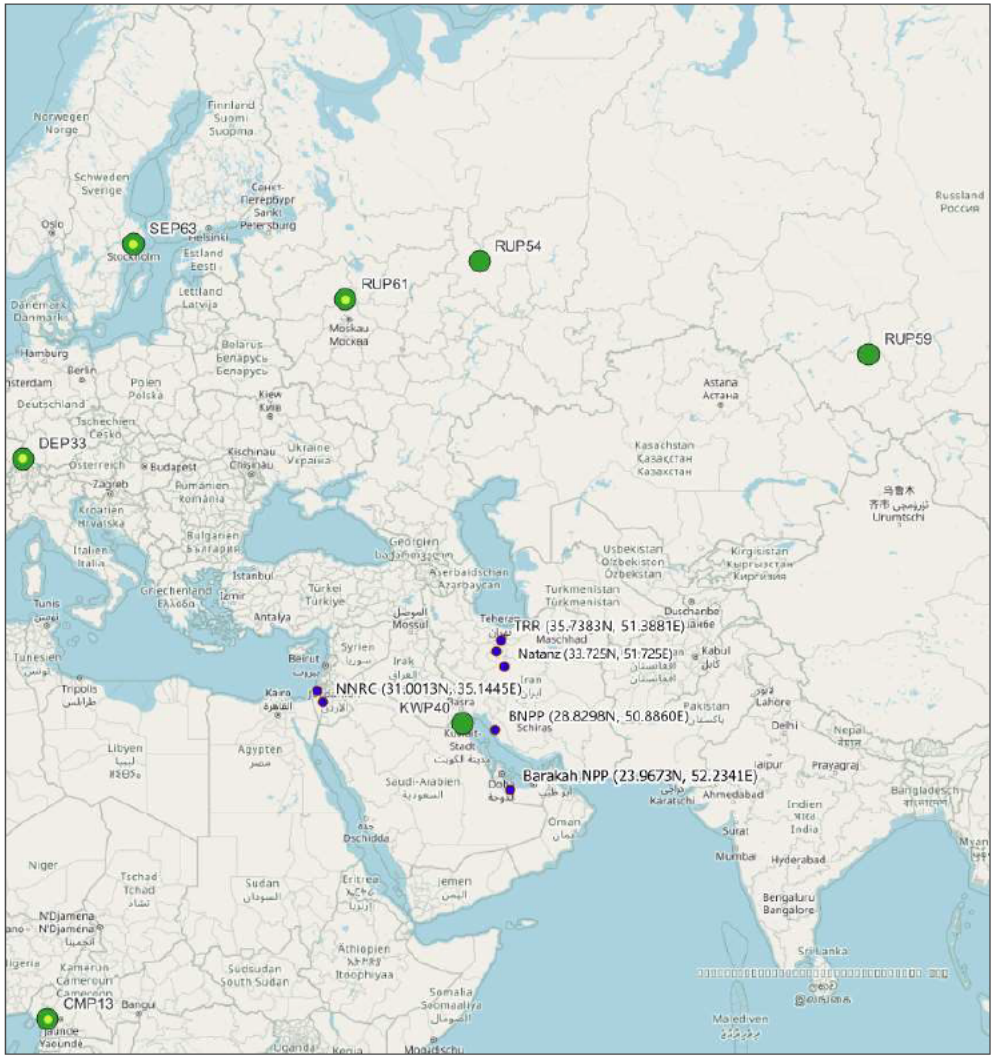


Figure 10 Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System (IMS) radionuclide detection network

International Monitoring System (IMS)

The International Monitoring System is a comprehensive global network of detectors that includes seismic, hydroacoustic, infrasound and radionuclide stations. This network is managed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and is designed to detect clandestine nuclear explosions. The IMS is more sensitive than the IRMIS network and provides different information.

The radionuclide stations in the network can detect very low levels of radiation in the atmosphere. The closest radionuclide station in the region is located in Kuwait City, with other relevant stations in Switzerland, Russia, China, Mongolia, and the British Indian Ocean Territory.

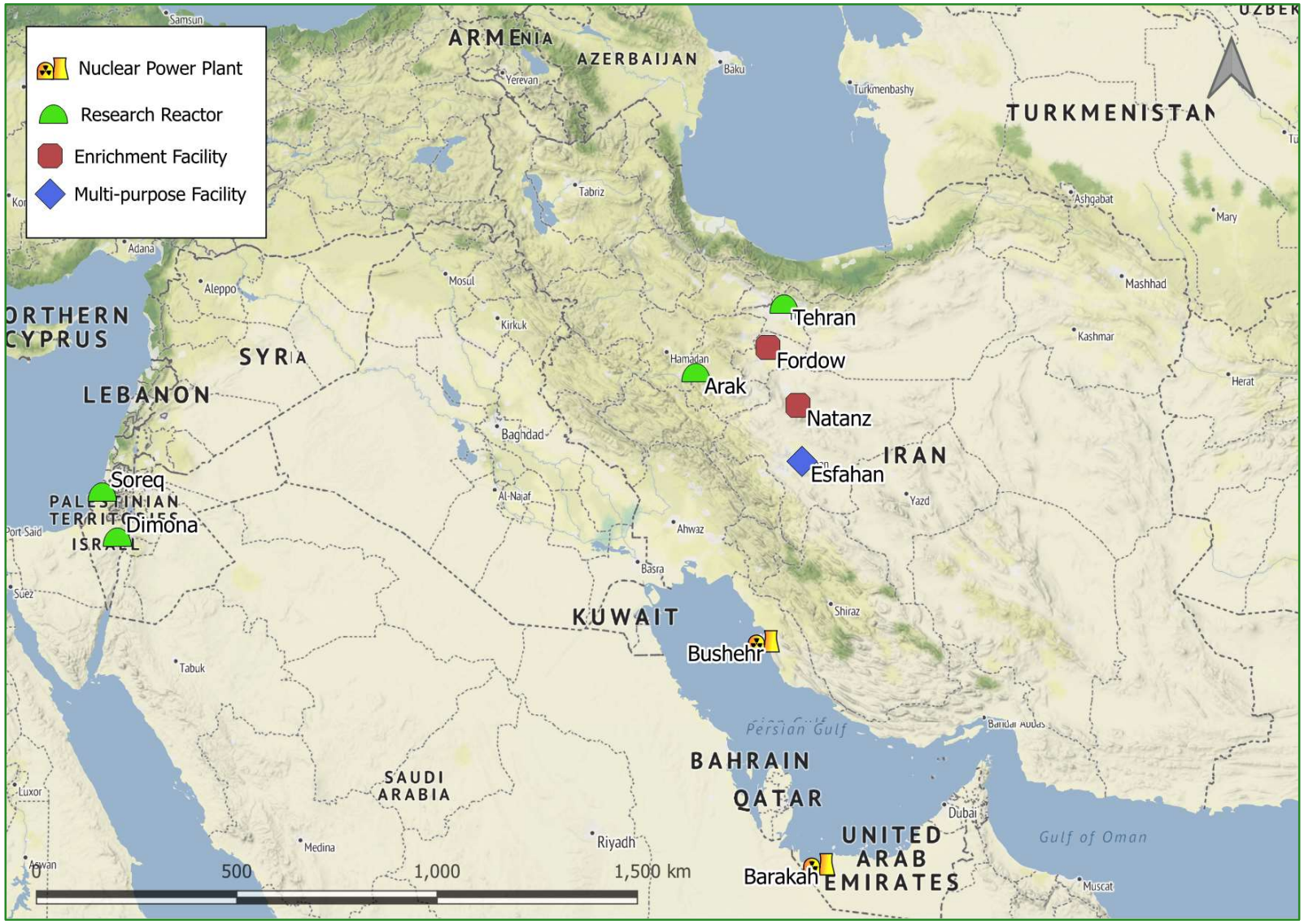
The system is highly effective, having detected all six of North Korea's declared nuclear tests between 2006 and 2017. The network also provided valuable information during the Fukushima nuclear accident, with measurements from stations in Japan helping to identify and quantify the amount of radioactive material that reached certain locations.

If there was a significant release from a nuclear reactor, it would be detected by the IMS network. However, the measurement process takes several days, so these stations do not provide an early warning system of a nuclear incident or provide real-time measurements to help inform urgent protective actions.

ARPANSA acknowledges ASNO as the National Authority under Article 3 of the CTBT for the release of IMS data.

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Locations of nuclear facilities in Iran and Israel, and United Arab Emirates

Figure 11

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Document 42

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

SITUATION UPDATE

Time/date of this report: 17 March 2026 at 10:00 AEDT

On 28 February 2026, Israel and the United States of America conducted a strike on Iranian targets in Tehran and other regional cities. Iran retaliated against Israel, regional American military assets, and against the Gulf States that host U.S. forward bases. Both sides of the conflict continue to conduct military strikes.

Sites related to Iran's nuclear program have reportedly been struck including the Natanz Nuclear Facility on 1 March 2026. The IAEA has acknowledged the strikes but confirmed there were no indications of radioactive releases. The Esfahan (Isfahan) Nuclear Technology/Research Centre and Fordow sites were previously struck. Modelling indicates that off-site radiological consequences from an incident at these sites are not significant.

Iran has also reported strikes on 7 March 2026 affecting a gamma irradiation facility in the Esfahan province, although no off-site radioactive contamination was detected. These types of facilities are used for sterilisation of microorganisms in medical devices, pharmaceuticals, or food products. They typically contain a high activity gamma source such as Cobalt-60. A release of this radioactive material could require off-site protective actions including relocation close to the site or food restrictions up to 20 km from the site.

Strikes occurring in Tehran are not reported to have struck the research reactor in Tehran. Should the research reactor be struck, it poses a low risk due to the small inventory and power output of the academic research reactor.

Israel also has several nuclear facilities, including the Negev (also called Dimona) Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. The Negev reactor is reported to be of higher power output than the Soreq facility. Iran has recently (5 March) threatened to strike the Negev Nuclear Facility should the U.S. seek regime change in Iran.

Reporting indicates that regional nuclear power plants in Bushehr (Iran) and Barakah (UAE) have not been targeted by the strikes.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

KEY MESSAGES

- Since 28 February 2026 Iran and Israel/The United States have been at war and actively launching drones and missiles.
- A gamma irradiation facility in the Esfahan province of Iran was reportedly affected by strikes, although no off-site contamination was detected. A release of radioactive material from this type of facility may require off-site protective actions such as relocation close to the site or food and drinking water restrictions up to 20 km from the site.
- Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. It is unlikely that any urgent protective actions would be required at the embassy locations.
- In a worst-case event, embassy staff may be instructed to shelter in place with doors and windows sealed and await further advice.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

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Protective actions that may be required following an incident at the Nuclear Power Plant

Should there be a large release of radioactive material from the Nuclear Power Plant in the region (Bushehr or Barakah), radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local directions: Follow local directions for protective actions such as evacuation.

ARPANSA assessment indicates that protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

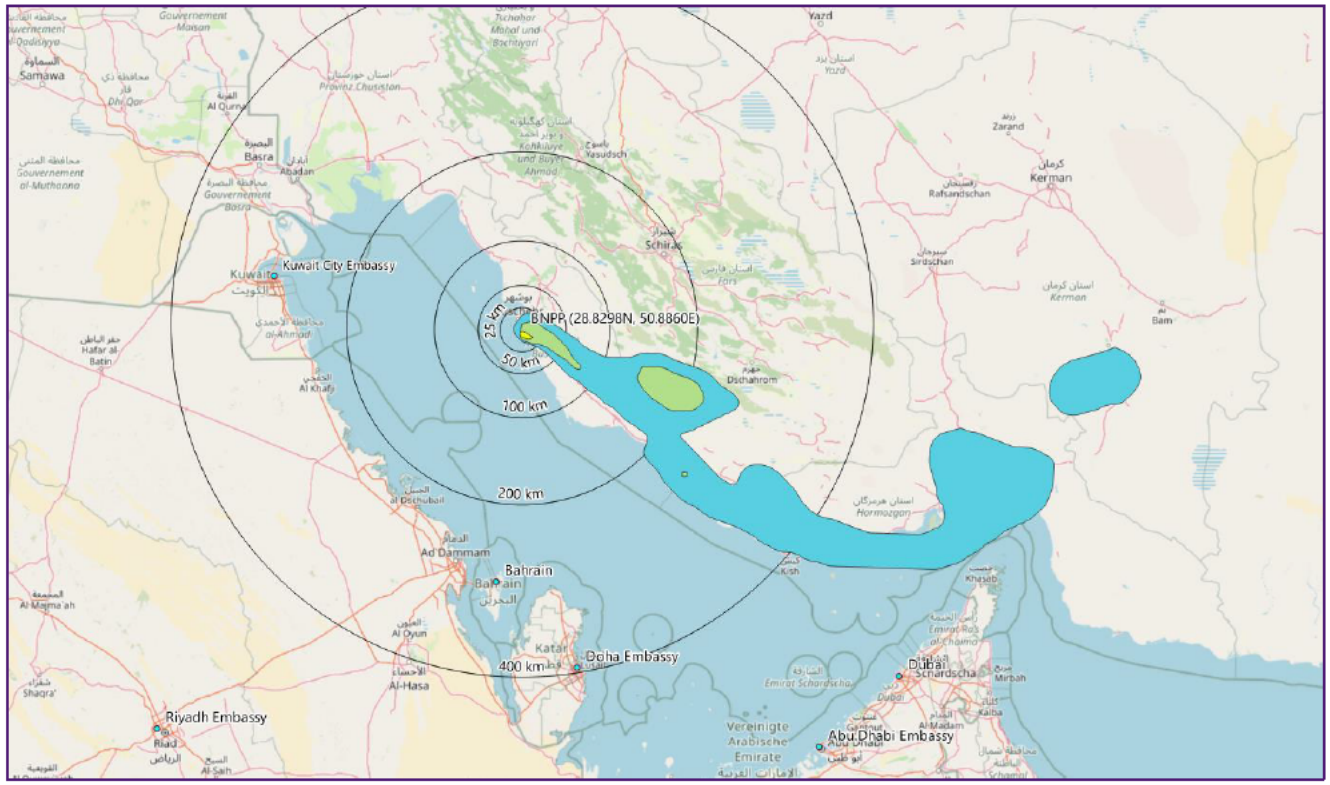
Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

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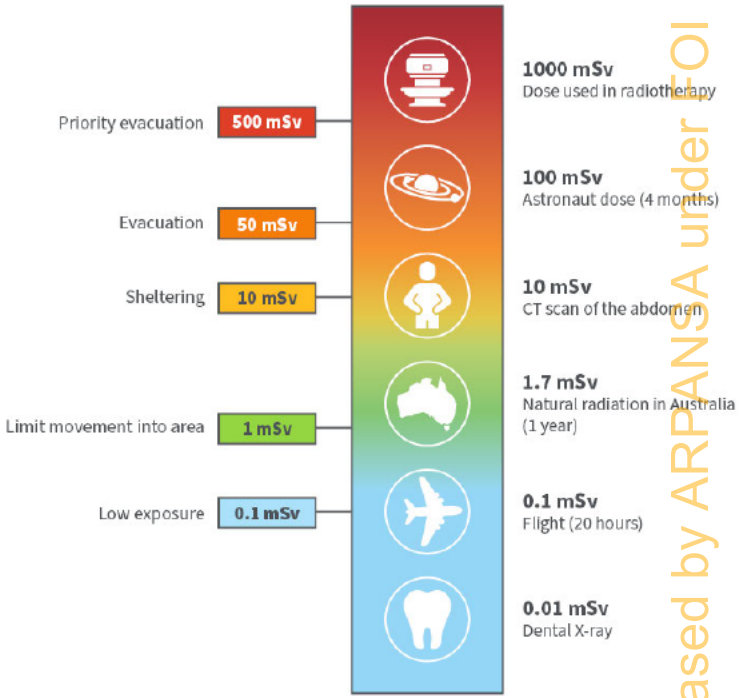
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran



Modelled release at 13:00 AEDT 17 March 2026 Model generated at 10:00 AEDT on 17 March 2026 *Figure 1*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 3000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows predominant plume direction to the east and south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 70km from the site
Food and water restrictions: May be required up to 100km from the site

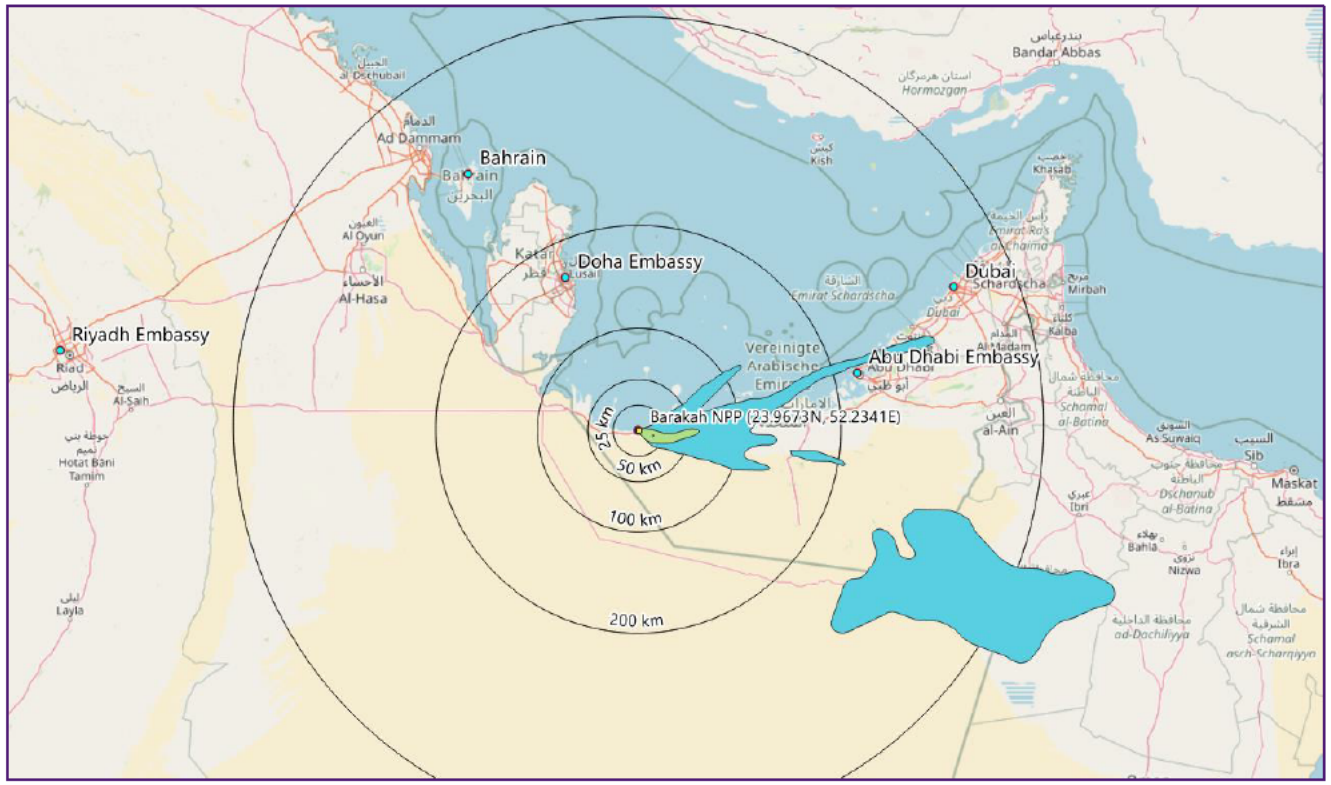
COMMENTS

Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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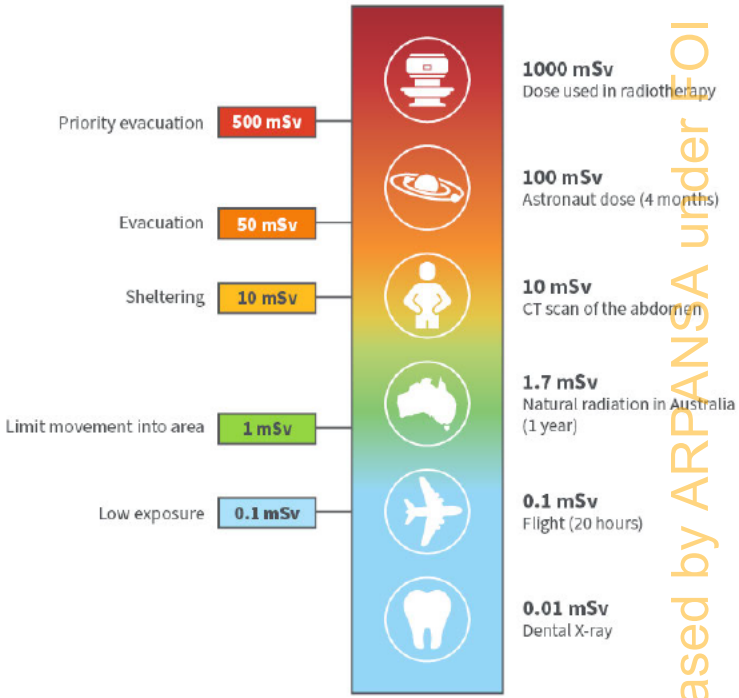
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Barakah Nuclear Power Plant in UAE



Modelled release at 13:00 AEDT 17 March 2026 Model generated at 10:00 AEDT on 17 March 2026 *Figure 2*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 4000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction initially to the east of the site.

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 70 km from the site
Food and water restrictions: May be required up to 100 km from the site

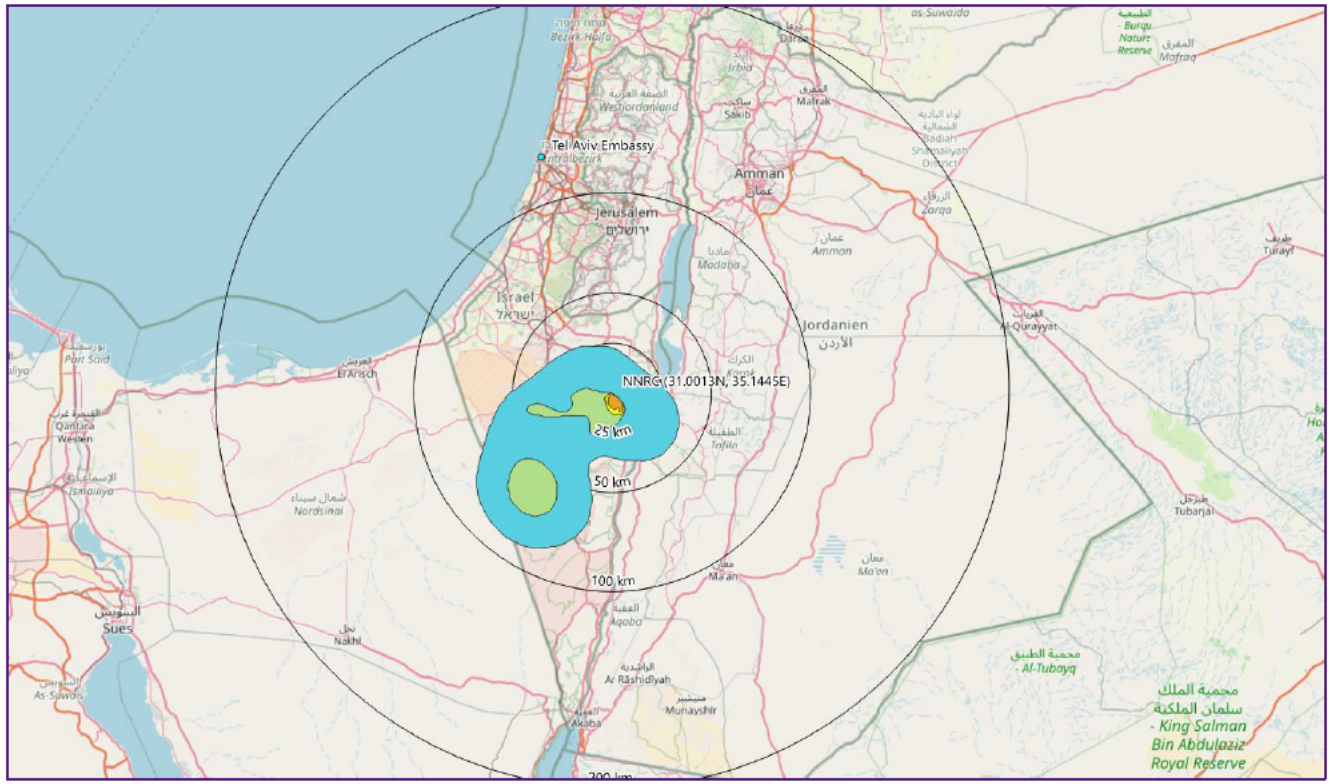
COMMENTS

Radiological risk at Australian embassy locations in Abu Dhabi, Dubai, Doha, Riyadh, and Bahrain is very low due to the distance from the Barakah facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

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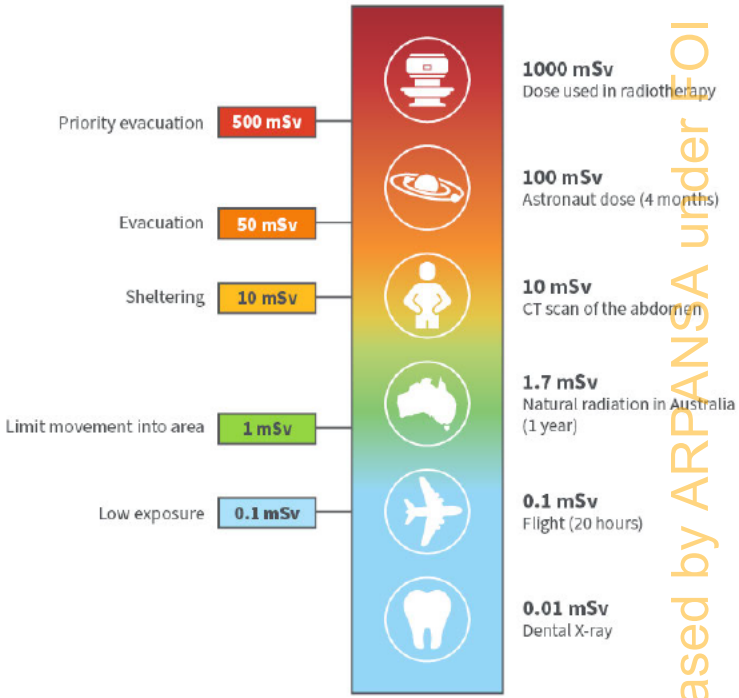
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Dimona, Israel



Modelled release at 13:00 AEDT 17 March 2026 Model generated at 10:00 AEDT on 17 March 2026 *Figure 3*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction initially to the south and south-east of the site, and then a change to the west and south-west

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 10 km from the site
Sheltering and KI Tablets: May be required up to 20 km from the site
Food and water restrictions: May be required up to 30 km from the site

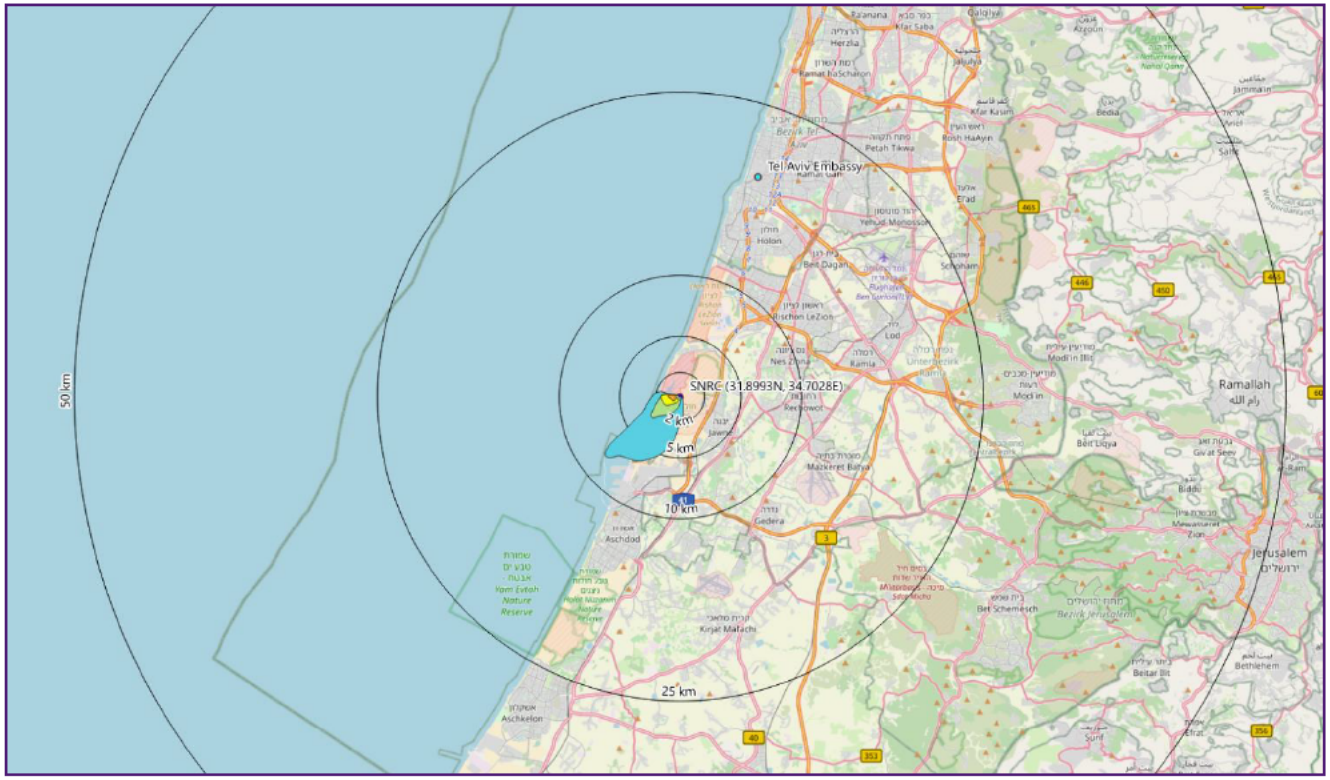
COMMENTS

Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Negev facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

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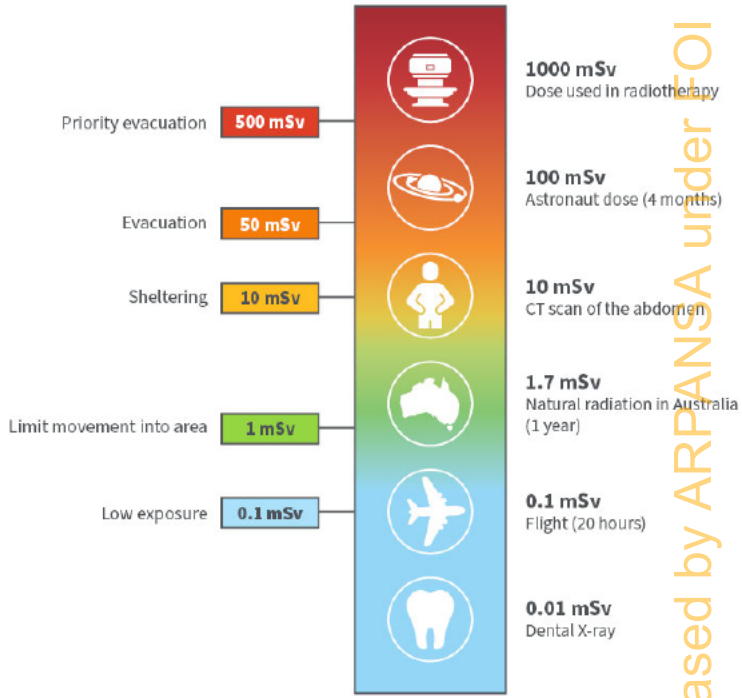
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



Modelled release at 13:00 AEDT 17 March 2026 Model generated at 10:00 AEDT on 17 March 2026 *Figure 4*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction predominantly to the west and south-west of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 3 km
Sheltering and KI Tablets: May be required up to 10 km
Food and water restrictions: May be required up to 20 km.

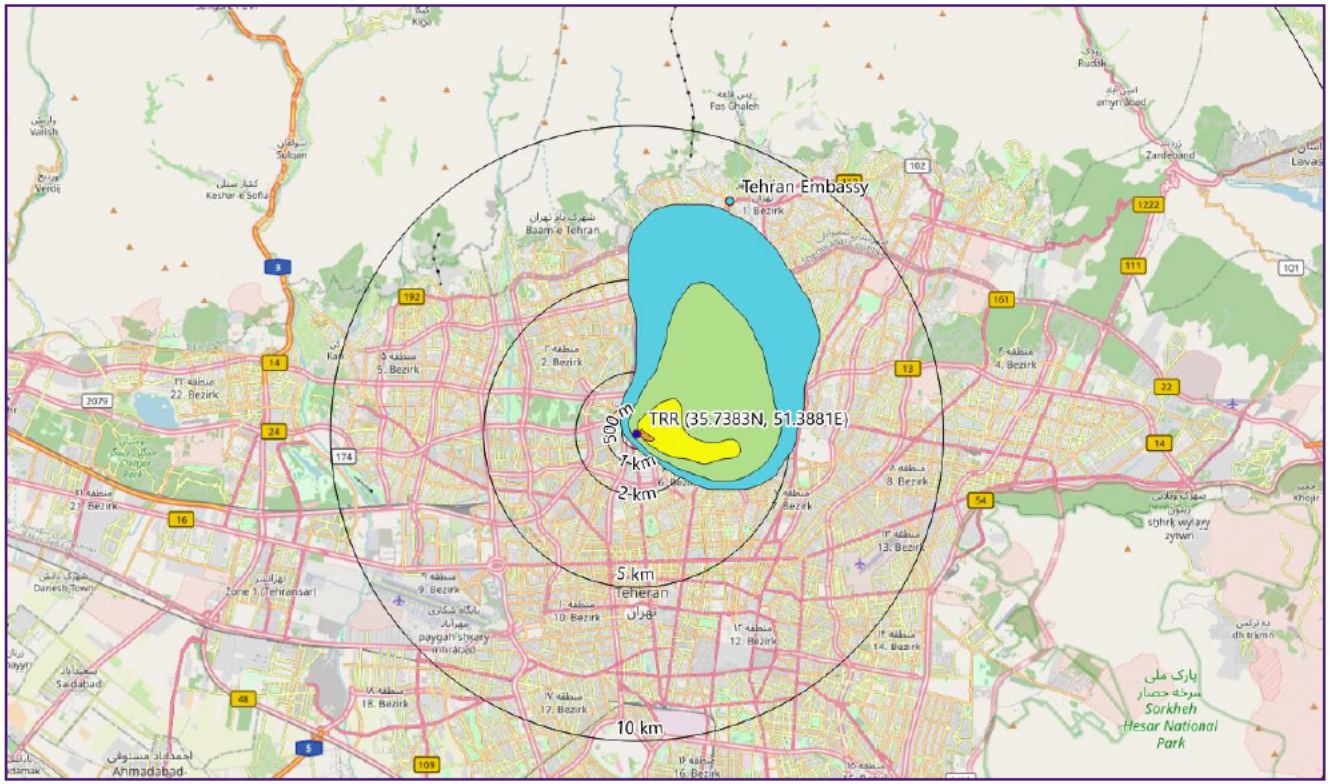
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Soreq facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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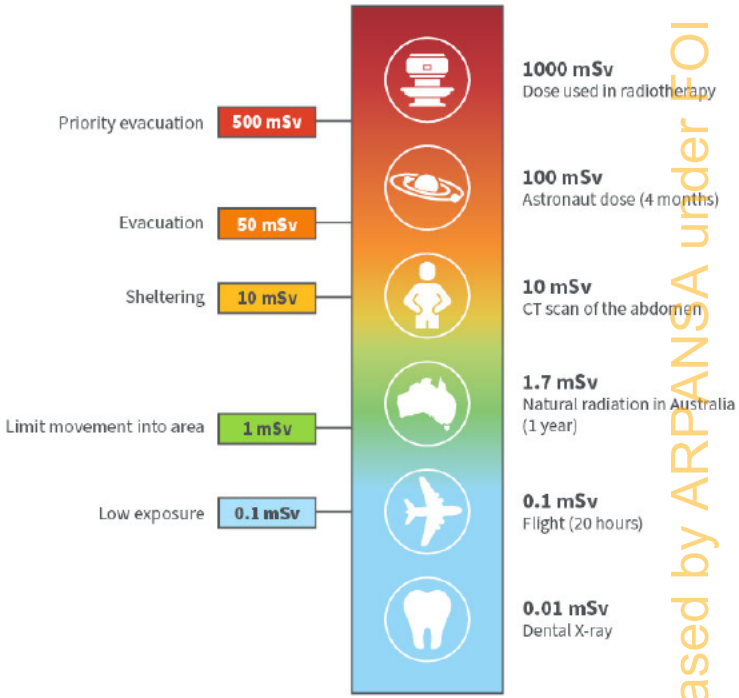
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



Modelled release at 13:00 AEDT 17 March 2026 Model generated at 10:00 AEDT on 17 March 2026 *Figure 5*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction initially to the east and then to the north-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km from the site
Sheltering and KI Tablets: May be required up to 5 km from the site
Food and water restrictions: May be required up to 10 km from the site.

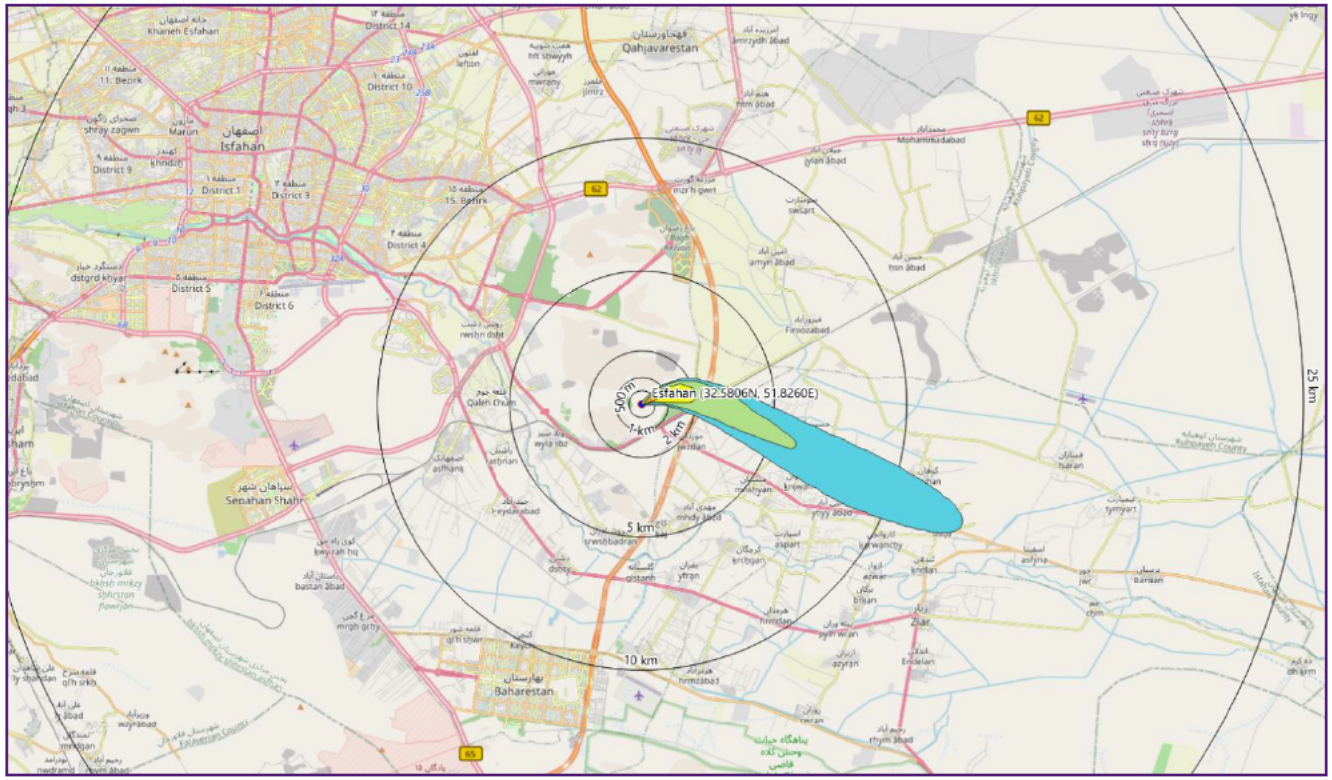
COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tehran is very low due to the distance from the Tehran facility. In the event of an incident at this facility protective actions may be required at this embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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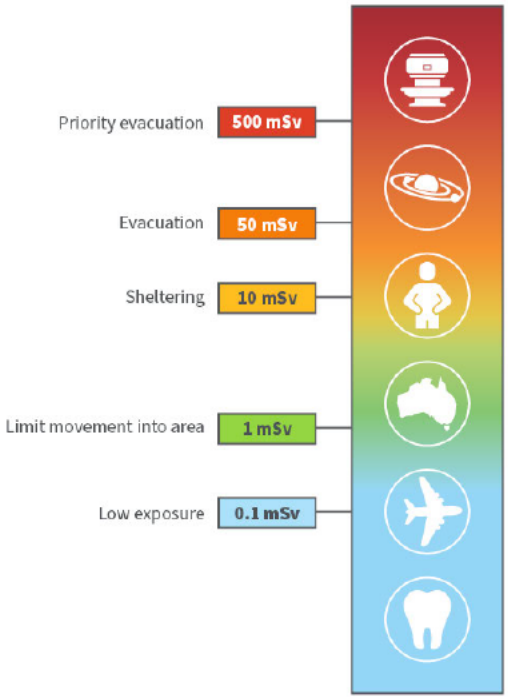
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran



Modelled release at 13:00 AEDT 17 March 2026 Model generated at 10:00 AEDT on 17 March 2026 *Figure 6*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east and south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km from the site
Sheltering: May be required up to 3 km from the site
Food and water restrictions: May be required up to 3 km from the site.

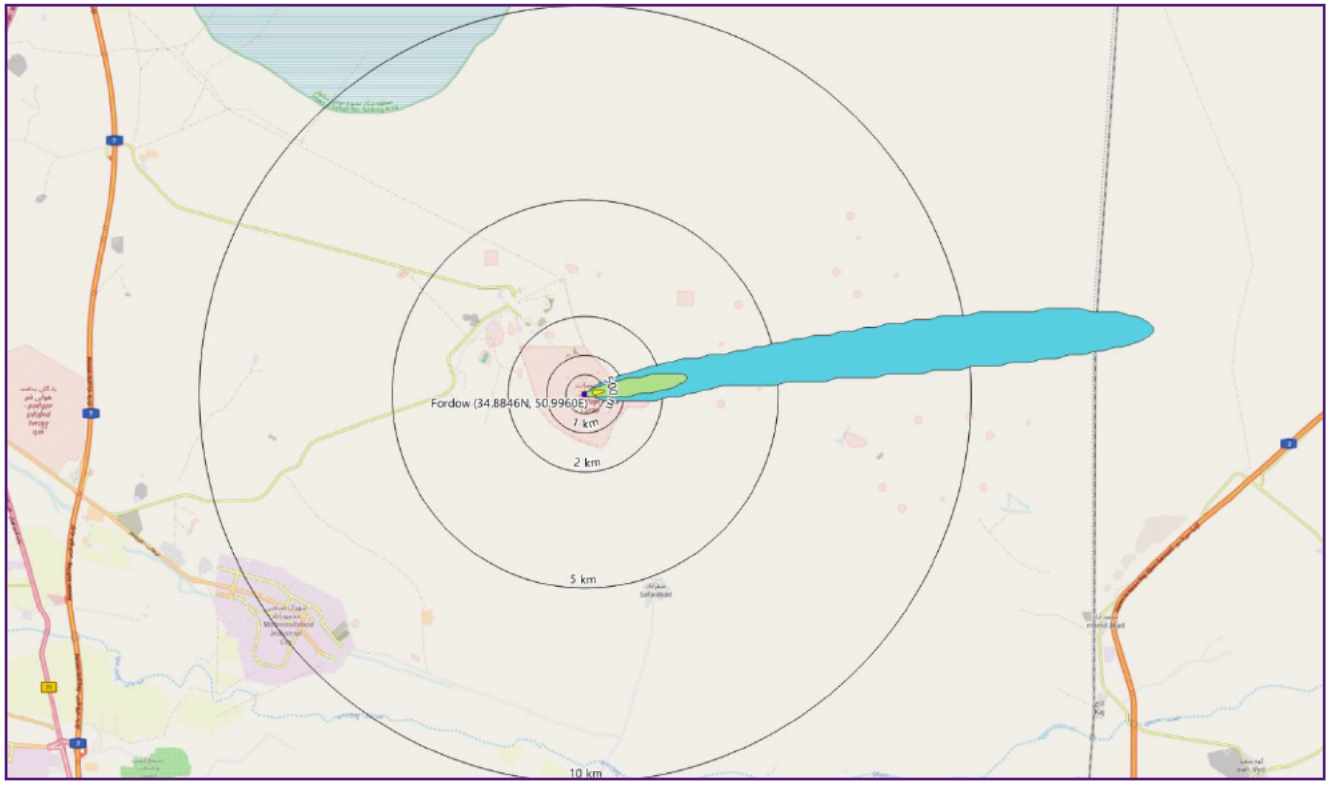
COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

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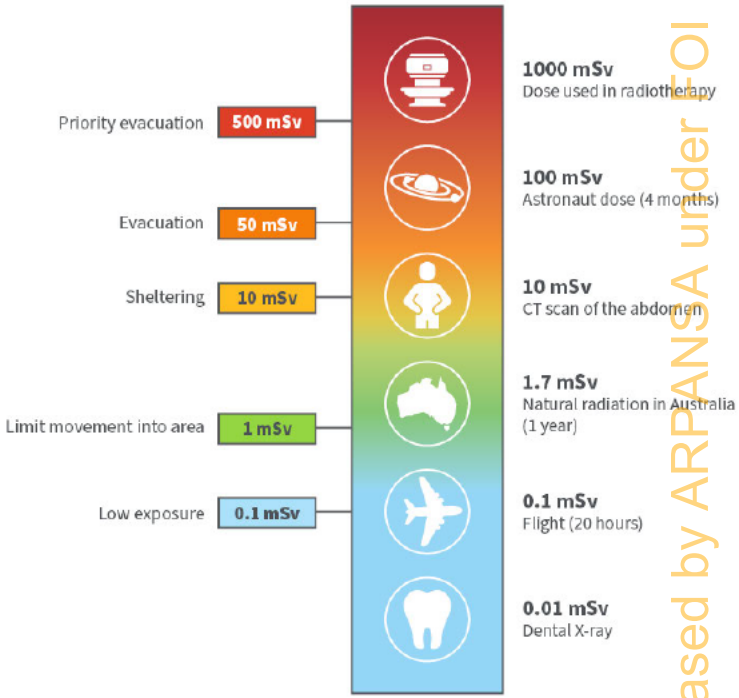
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran



Modelled release at 13:00 AEDT 17 March 2026 Model generated at 10:00 AEDT on 17 March 2026 *Figure 7*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

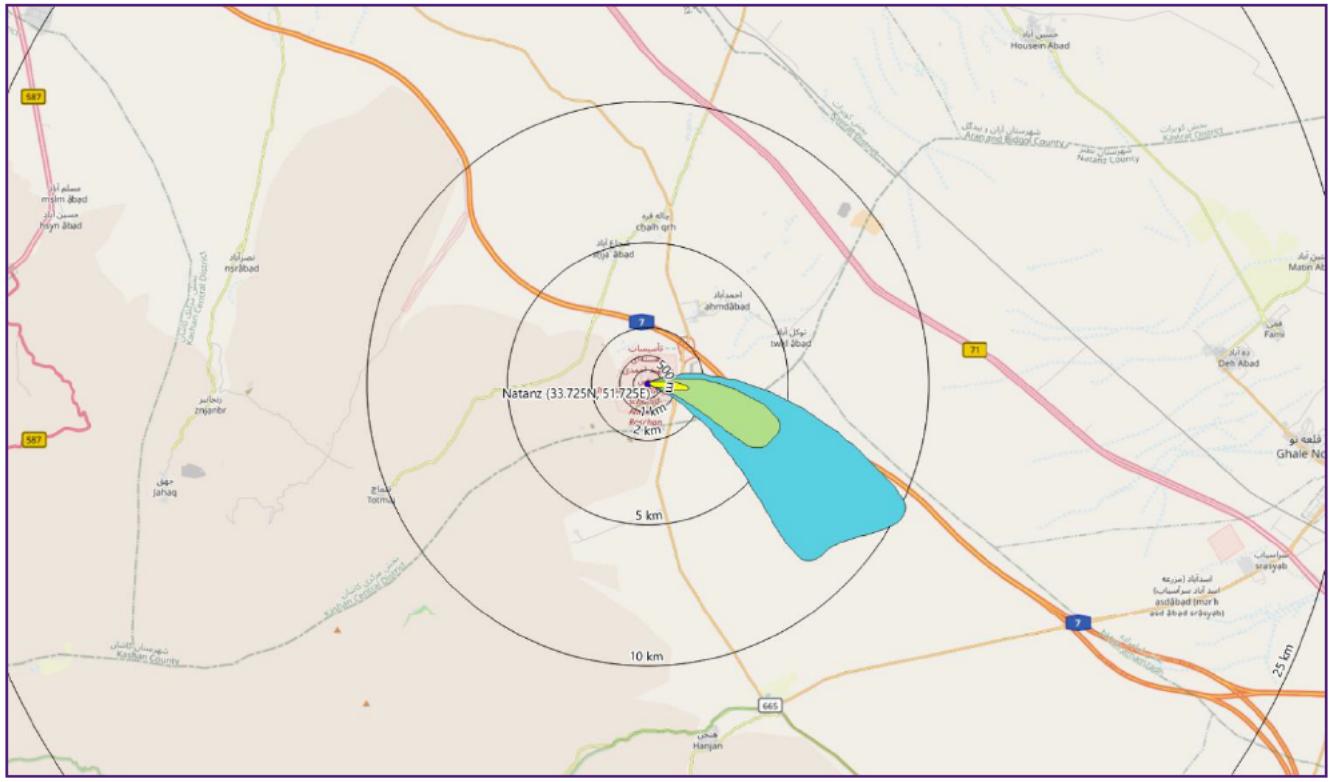
COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

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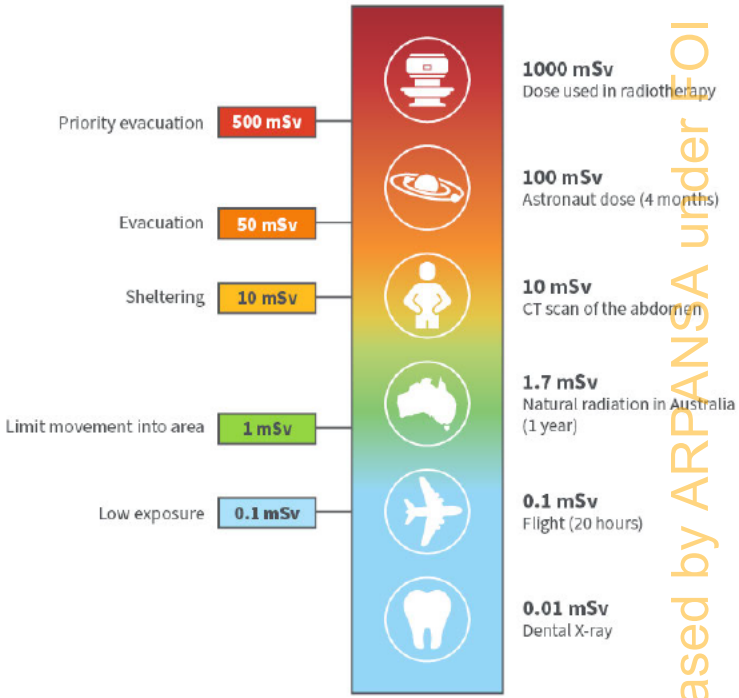
ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran



Modelled release at 13:00 AEDT 17 March 2026 Model generated at 10:00 AEDT on 17 March 2026 *Figure 8*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexaflouride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east and south-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required off-site
Sheltering: May be required up to 3 km from the site
Food and water restrictions: May be required up to 2 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

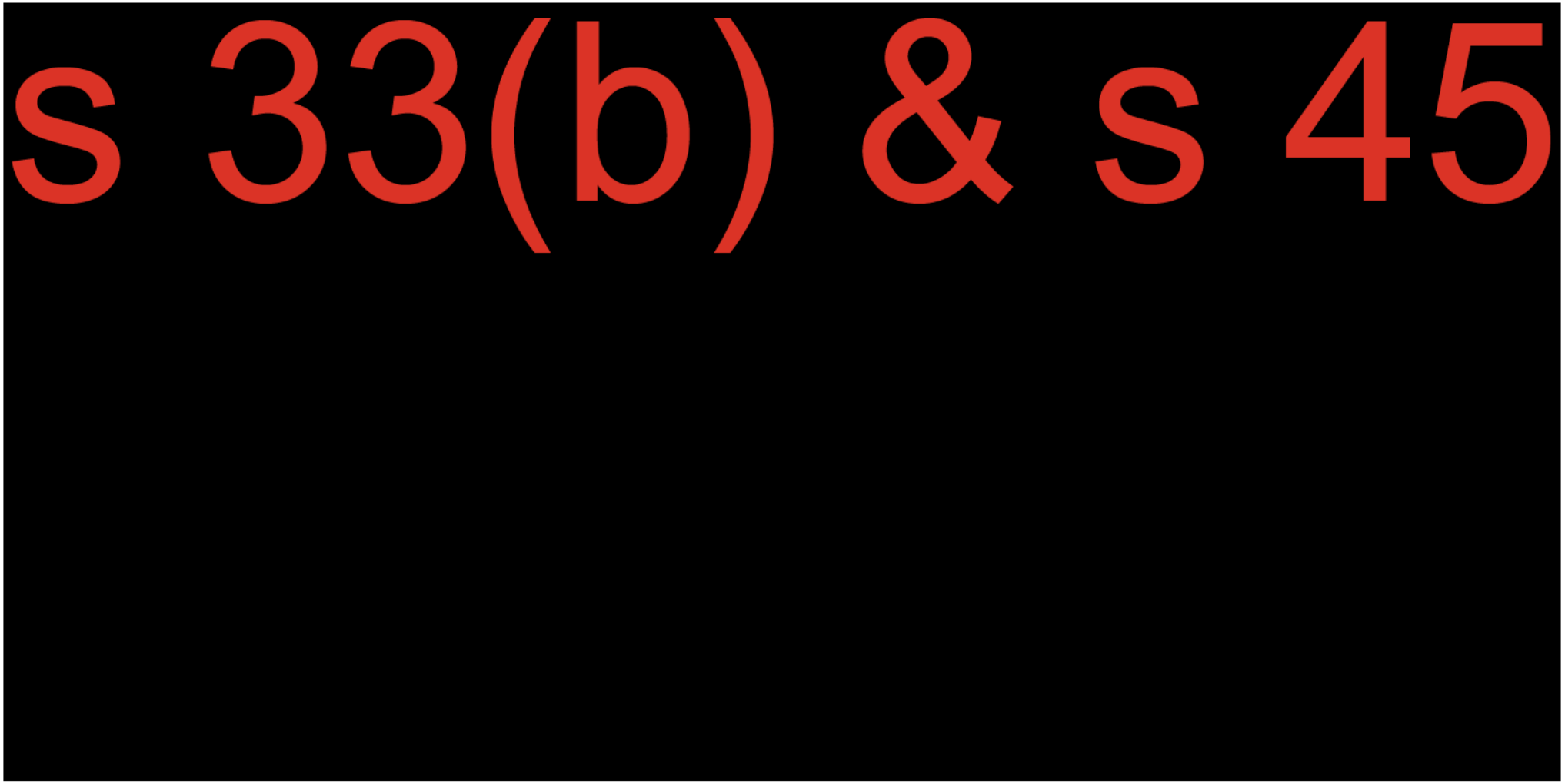


Figure 9 s 33(b) & s 45

International Radiation Monitoring Information System (IRMIS)

This network is designed to provide near real-time information and can be used to inform urgent protective actions.

A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency.

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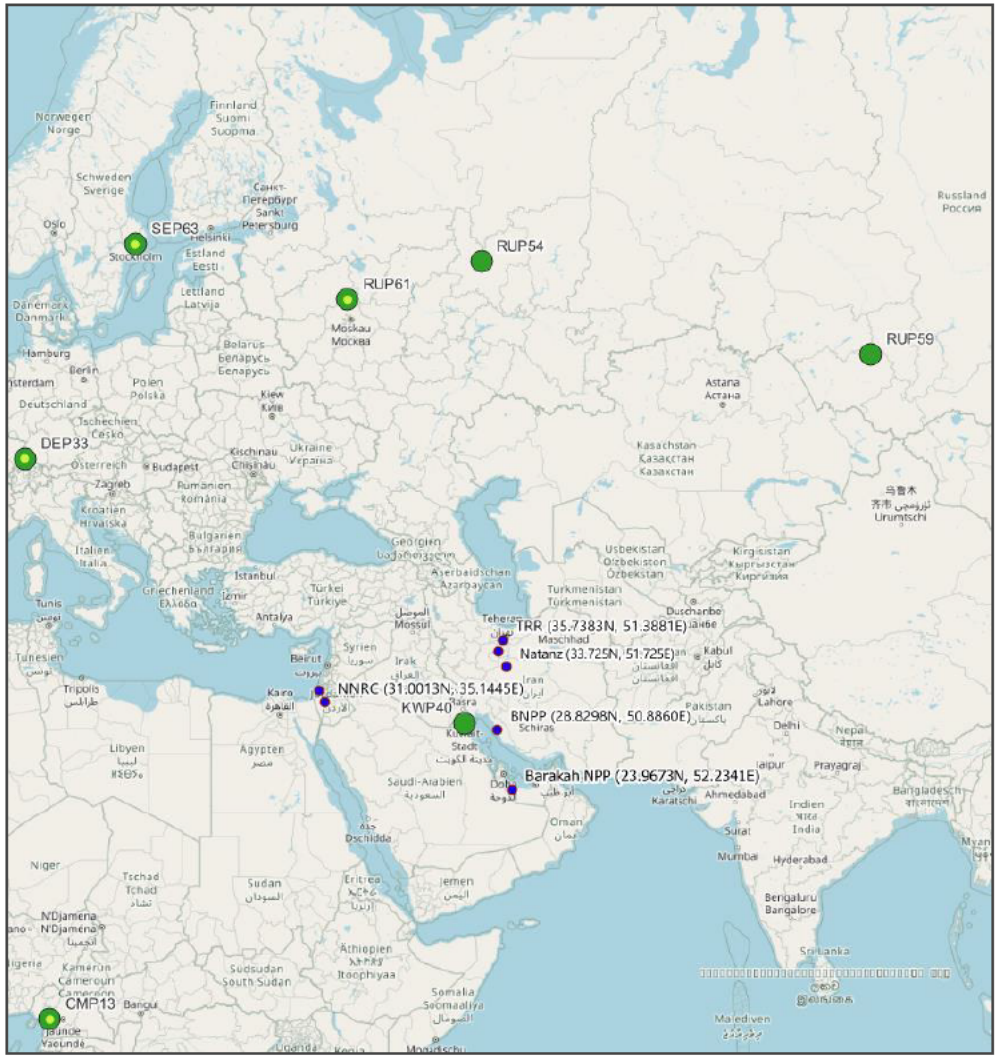


Figure 10 Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System (IMS) radionuclide detection network

International Monitoring System (IMS)

The International Monitoring System is a comprehensive global network of detectors that includes seismic, hydroacoustic, infrasound and radionuclide stations. This network is managed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and is designed to detect clandestine nuclear explosions. The IMS is more sensitive than the IRMIS network and provides different information.

The radionuclide stations in the network can detect very low levels of radiation in the atmosphere. The closest radionuclide station in the region is located in Kuwait City, with other relevant stations in Switzerland, Russia, China, Mongolia, and the British Indian Ocean Territory.

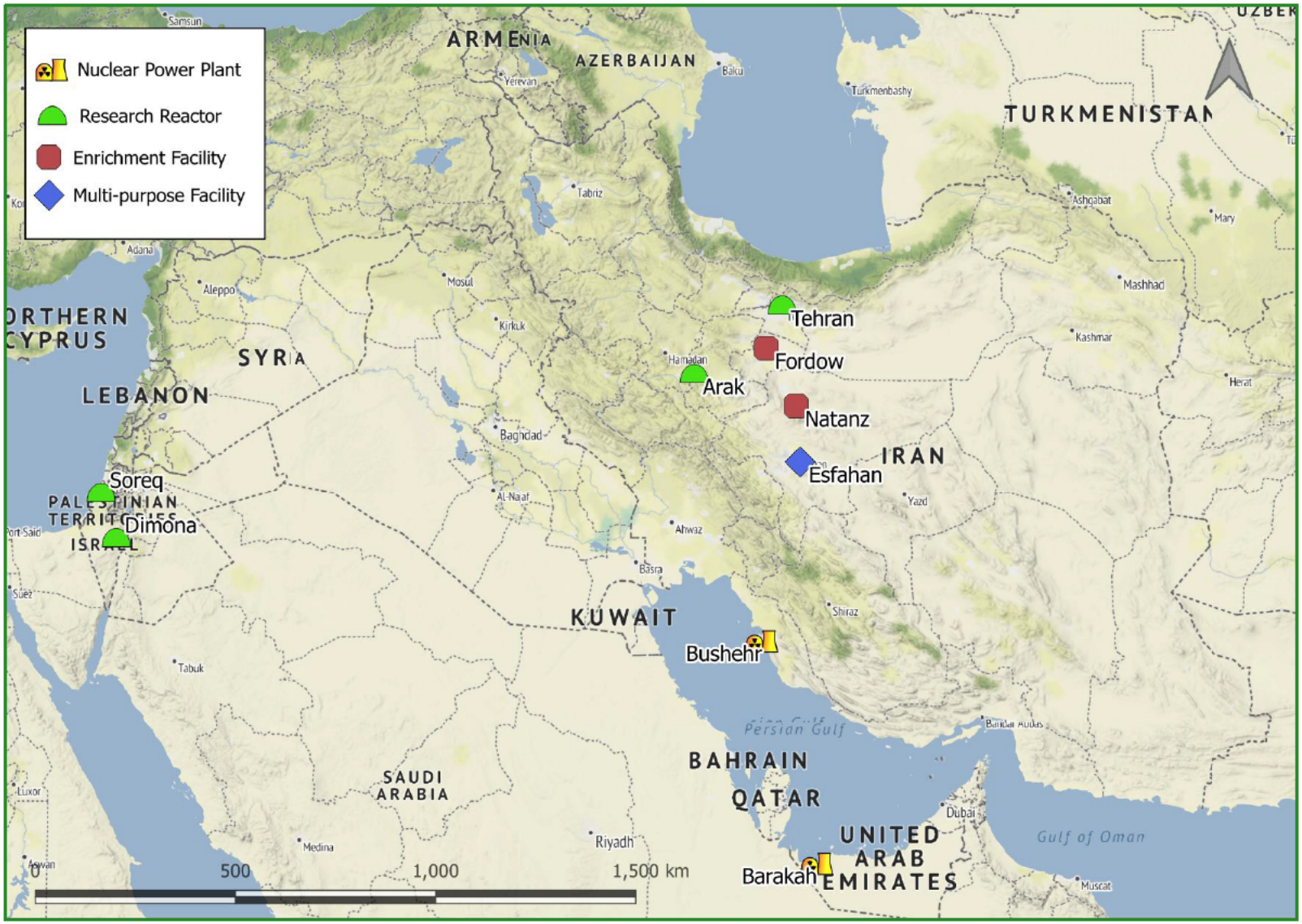
The system is highly effective, having detected all six of North Korea's declared nuclear tests between 2006 and 2017. The network also provided valuable information during the Fukushima nuclear accident, with measurements from stations in Japan helping to identify and quantify the amount of radioactive material that reached certain locations.

If there was a significant release from a nuclear reactor, it would be detected by the IMS network. However, the measurement process takes several days, so these stations do not provide an early warning system of a nuclear incident or provide real-time measurements to help inform urgent protective actions.

ARPANSA acknowledges ASNO as the National Authority under Article 3 of the CTBT for the release of IMS data.

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Locations of nuclear facilities in Iran and Israel, and United Arab Emirates

Figure 11

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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

ARPANSA ASSESSMENT OF RISKS TO NUCLEAR FACILITIES

Time/date of this report: 23 March 2026 at 16:00 AEDT

Dimona (Israel)

s 33(a)(iii) [redacted]

Soreq (Israel)

Smaller reactor than Dimona (5 MW) with more information publicly available. The model scenario is a scaled down version of the Dimona scenario and has limited offsite impacts by comparison. Damage to the power grid or backup power supply may have impacts on reactor safety.

Bushehr (Iran)

Iran has also reported a projectile struck the premises of the Bushehr Nuclear Power Plant on 17 March 2026. Reports indicate that there was no damage to the facility or personnel. ARPANSA expects that similar to the situation in Ukraine, damage to critical infrastructure and backup systems may prevent the safe operation of the reactor. The modelled scenario includes a loss of offsite power and no functioning backup supply. Availability of backup power supply would allow the reactor to be safely powered down.

Barakah (UAE)

The modelled scenario also assumes a loss of offsite power and no functioning backup supply. Facility has not been directly targeted.

Natanz/Fordow/Esfahan (Iran)

The largest risks at these facilities would be damage resulting in a release of Iran's stockpile of enriched Uranium. The exact location of this stockpile is not publicly known. The modelled scenario assumes that the entirety of the stockpile is present at each site and is released entirely. It is much more likely that enriched material is stored in hardened facilities which would limit any offsite release.

Tehran (Iran)

Similar research reactor to Soreq and the same scenario is used. Media reports state the facility has not been directly targeted and has not been linked to Iran's enrichment program.

May be shutdown and not in operation.

Other facilities

Facilities not included in ARPANSA's Radiation Assessment Report would require similar protective actions in the event there was an offsite release but we consider these facilities at much lower risk of damage or disruption.

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ARPANSA Radiation Assessment Report: Incident at Foreign Nuclear Facilities in Iran, Israel and UAE

SITUATION UPDATE

On 28 February 2026, Israel and the United States of America conducted a strike on Iranian targets in Tehran and other regional cities. Iran retaliated against Israel, regional American military assets, and against the Gulf States that host U.S. forward bases. Both sides of the conflict continue to conduct military strikes, and threats have been made that power facilities in the region may be targeted.

Sites related to Iran's nuclear program have reportedly been struck including the Natanz Nuclear Facility on 1 March and 21 March 2026. The IAEA has acknowledged the strikes but confirmed there were no indications of radioactive releases. The Esfahan (Isfahan) Nuclear Technology/Research Centre and Fordow sites were previously struck. Modelling indicates that off-site radiological consequences from an incident at these sites are not significant.

Iran has also reported a projectile struck the premises of the Bushehr Nuclear Power Plant on 17 March 2026. reports indicate that there was no damage to the facility or personnel. Damage to the facility is unlikely to result in urgent protective actions being required at Australian embassy locations due to the distance from the site. In a worst-case event, embassy staff may be instructed to shelter in place with doors and windows sealed and await further advice.

Strikes occurring in Tehran are not reported to have struck the research reactor in Tehran. Should the research reactor be struck, it poses a low risk due to the small inventory and power output of the academic research reactor.

Israel also has several nuclear facilities, including the Negev (also called Dimona) Nuclear Facility and the Soreq Nuclear Center that both contain research reactors. The Negev reactor is reported to be of higher power output than the Soreq facility. Iran has recently (5 March) threatened to strike the Negev Nuclear Facility should the U.S. seek regime change in Iran and has struck the nearby towns of Arad and Dimona on 21 March 2026.

Media Reporting indicates that the nuclear power plant in Barakah (UAE) has not been targeted by strikes.

Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. In the event of an incident at a nuclear site, it is unlikely that any urgent protective actions would be required at the embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. As a precautionary measure, and if feasible, having a short-term stockpile of food and water may be prudent to avoid ingesting potentially contaminated food and water.

Time/date of this report: 23 March 2026 at 16:00 AEDT

KEY MESSAGES

- Since 28 February 2026 Iran and Israel/The United States have been at war and actively launching drones and missiles.
- Iran has reported a projectile striking the premises of the Bushehr Nuclear Power Plant on 17 March 2026. Reports indicate there was no damage to the facility or personnel.
- Radiological risk to the Australian embassies in the region is very low due to the distance from major nuclear facilities. It is unlikely that any urgent protective actions would be required at the embassy locations.
- In a worst-case event, embassy staff may be instructed to shelter in place with doors and windows sealed and await further advice.

DISCLAIMER

Radiation health advice to shelter in place is not informed by possible security considerations (e.g., military activity). Members of the public in the region should be encouraged to follow local advice.

ARPANSA DUTY OFFICER

s 22(1)(a)(ii) @arpansa.gov.au | s 22(1)(a)(ii)

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s 33(a)(ii) & s 33(a)(iii)

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s 33(a)(ii) & s 33(a)(iii)

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Protective actions that may be required following an incident at the Nuclear Power Plant

Should there be a large release of radioactive material from the Nuclear Power Plant in the region (Bushehr or Barakah), radioactive contamination may deposit on land used for food production and in water bodies close to the site e.g., the Persian Gulf.

Within several tens of kilometres



EVACUATION
Local directions: Follow local directions for protective actions such as evacuation.

ARPANSA assessment indicates that protective actions may be required out to several tens of kilometres from the site. These protective actions would not be required at Australian embassy locations.

Within around one hundred kilometres



SHELTER IN PLACE and POTASSIUM IODIDE TABLETS
Local Directions: Follow local directions provided with regard to protective actions such as shelter in place and taking potassium iodide tablets.



ARPANSA assessment indicates that these protective actions may be required out to around one hundred kilometres from the site. These protective actions are unlikely to be required at Australian embassy locations.

ACTION
In a worst-case event, staff at embassy locations may be required to undertake some protective actions. The primary protective action would be to shelter in place with doors and windows sealed and await further advice.
As an additional protective action, use of potassium iodide tablets may be directed. These tablets should only be taken if instructed to do so.

Within several hundred kilometres



FOOD and WATER RESTRICTIONS
Monitoring of locally produced food and drinking water may be conducted. This may be required in regions with Australian embassies such as Kuwait and Qatar.



At these distances, the consumption of potentially contaminated food and drinking water does not present an immediate health hazard, although continued consumption may lead to an increased risk of long-term health effects. Monitoring would be conducted as a precautionary measure to prevent this risk.

Water supplied through desalination may not remove all radioactive contaminants and would still require monitoring to ensure radiation levels are safe for consumption. It is likely that desalination plants in the region already have appropriate means to screen for radiation levels in the water supply. If significant radiation contamination could not be removed, restriction of desalinated water may be required.

ACTION
As a precautionary measure, and if feasible, having a short-term stockpile e.g., 7 days of food and water, at the Kuwait City and Doha embassies may be prudent and provide additional reassurance to embassy staff as they are within several hundred kilometres of the reactor site.

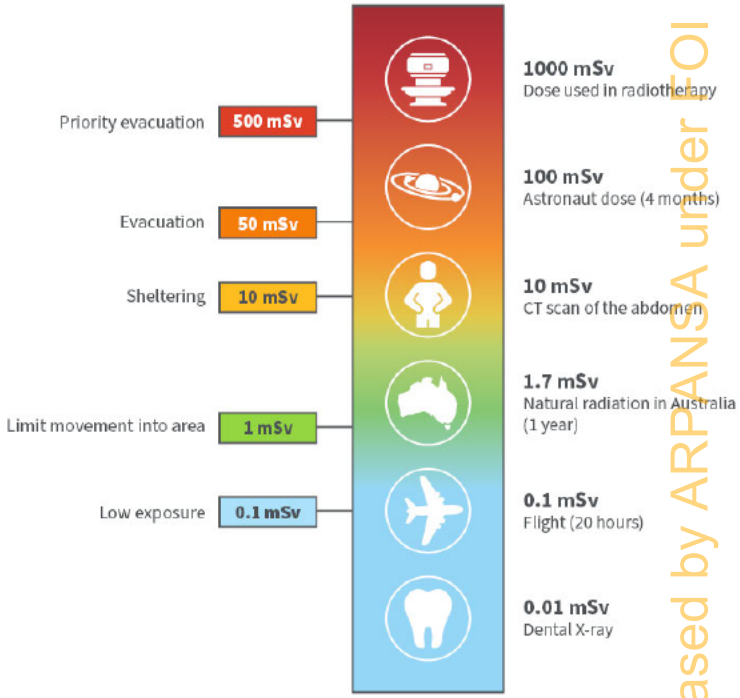
Released by ARPANSA under FOI

HYPOTHETICAL RELEASE – Bushehr Nuclear Power Plant in Iran



Modelled release at 13:00 AEDT 23 March 2026 Model generated at 10:00 AEDT on 23 March 2026 *Figure 3*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 3000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows predominant plume direction to the north and north-west of the site

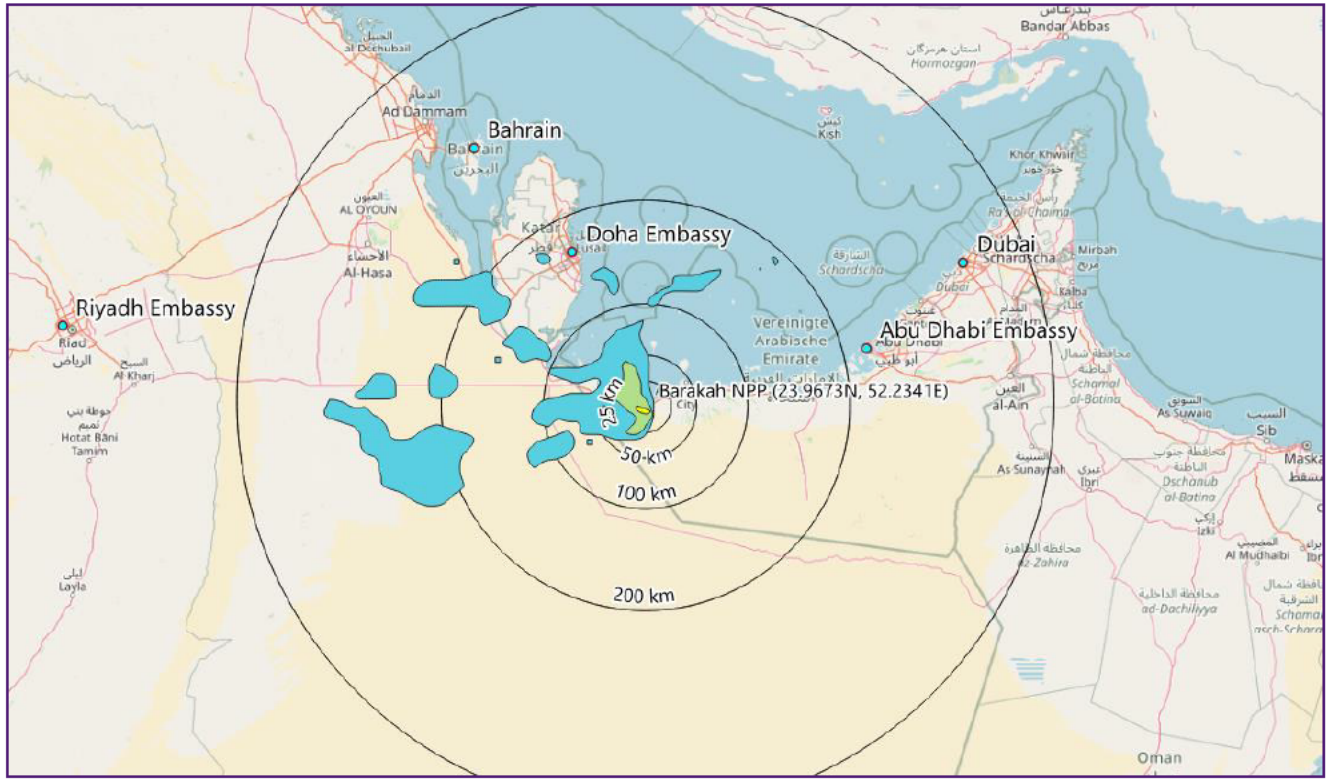
Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 70km from the site
Food and water restrictions: May be required up to 100km from the site

COMMENTS

Radiological risk at Australian embassy locations in Kuwait City, Doha, Riyadh, and Bahrain is very low due to the distance from the Bushehr facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

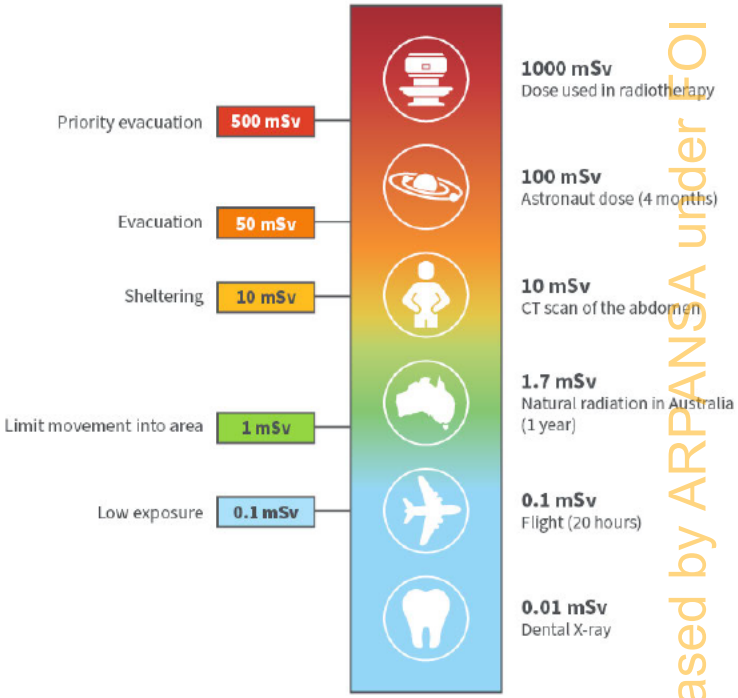
Released by ARPANSA under FOI

HYPOTHETICAL RELEASE – Barakah Nuclear Power Plant in UAE



Modelled release at 13:00 AEDT 23 March 2026 Model generated at 10:00 AEDT on 23 March 2026 *Figure 4*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor power assumed to be 4000 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction initially to the west of the site.

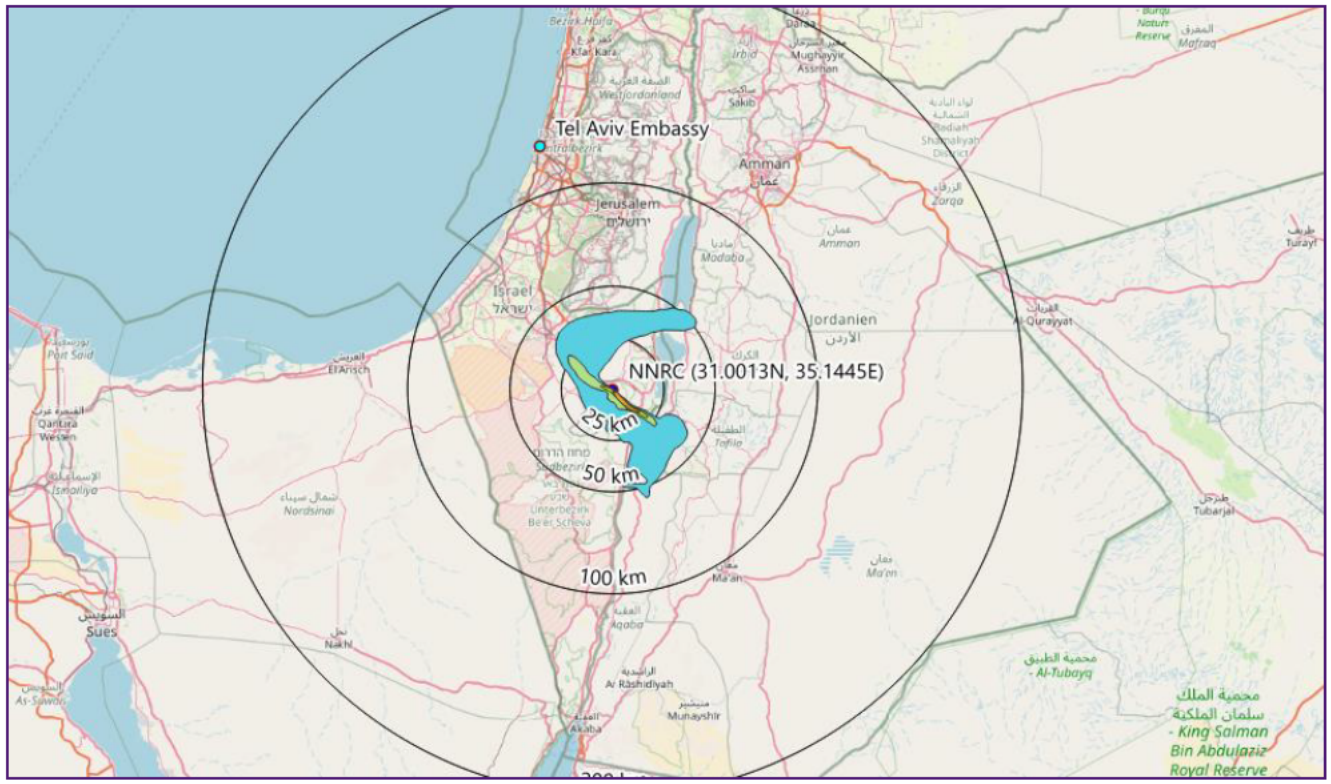
Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 5 km from the site
Sheltering and KI Tablets: May be required up to 70 km from the site
Food and water restrictions: May be required up to 100 km from the site

COMMENTS

Radiological risk at Australian embassy locations in Abu Dhabi, Dubai, Doha, Riyadh, and Bahrain is very low due to the distance from the Barakah facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.

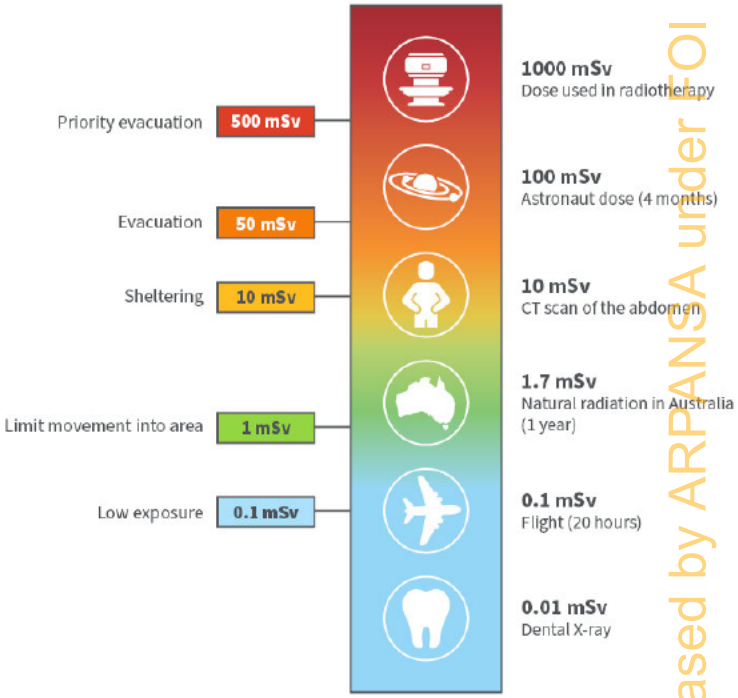
Released by ARPANSA under FOI

HYPOTHETICAL RELEASE – Negev Nuclear Facility in Dimona, Israel



Modelled release at 13:00 AEDT 23 March 2026 Model generated at 10:00 AEDT on 23 March 2026 *Figure 5*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply. Reactor containment is considered damaged. Reactor power assumed to be 150 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction initially to the south and south-east of the site, and then a change to the west and north-west

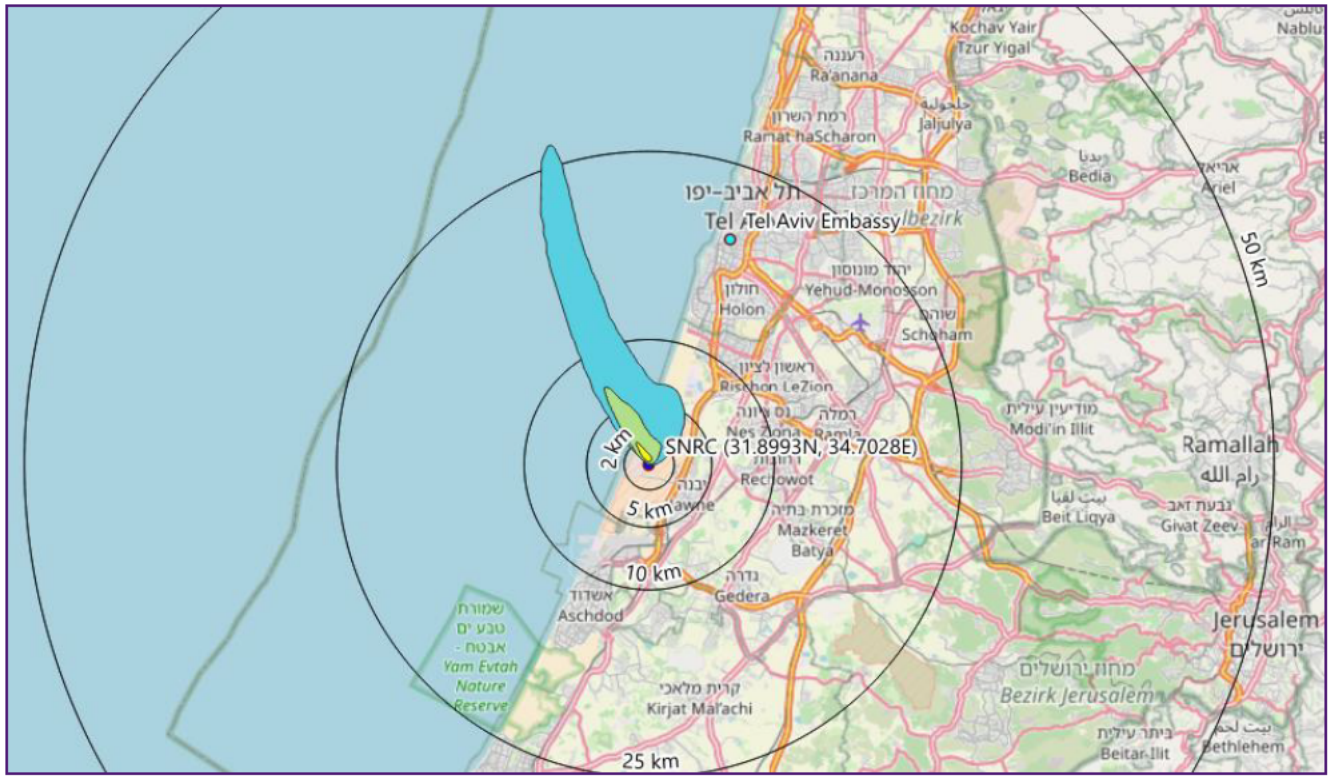
Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 15 km from the site
Sheltering and KI Tablets: May be required up to 25 km from the site
Food and water restrictions: May be required up to 30 km from the site

COMMENTS

Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Negev facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice. Some contamination requiring implementation of food restrictions may reach greater distances including neighbouring countries.

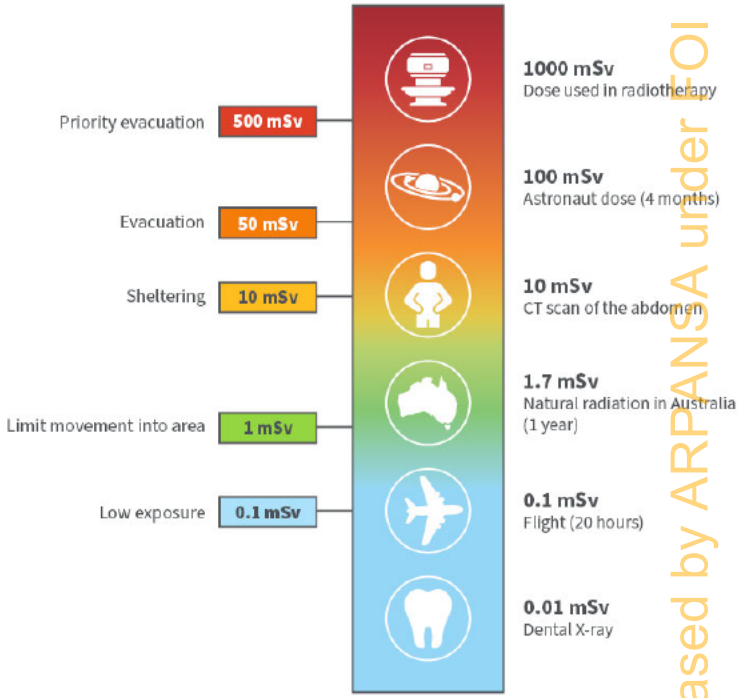
Released by ARPANSA under FOI

HYPOTHETICAL RELEASE – Soreq Nuclear Facility in Israel



Modelled release at 13:00 AEDT 23 March 2026 Model generated at 10:00 AEDT on 23 March 2026 *Figure 6*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction predominantly to the north and north-west of the site

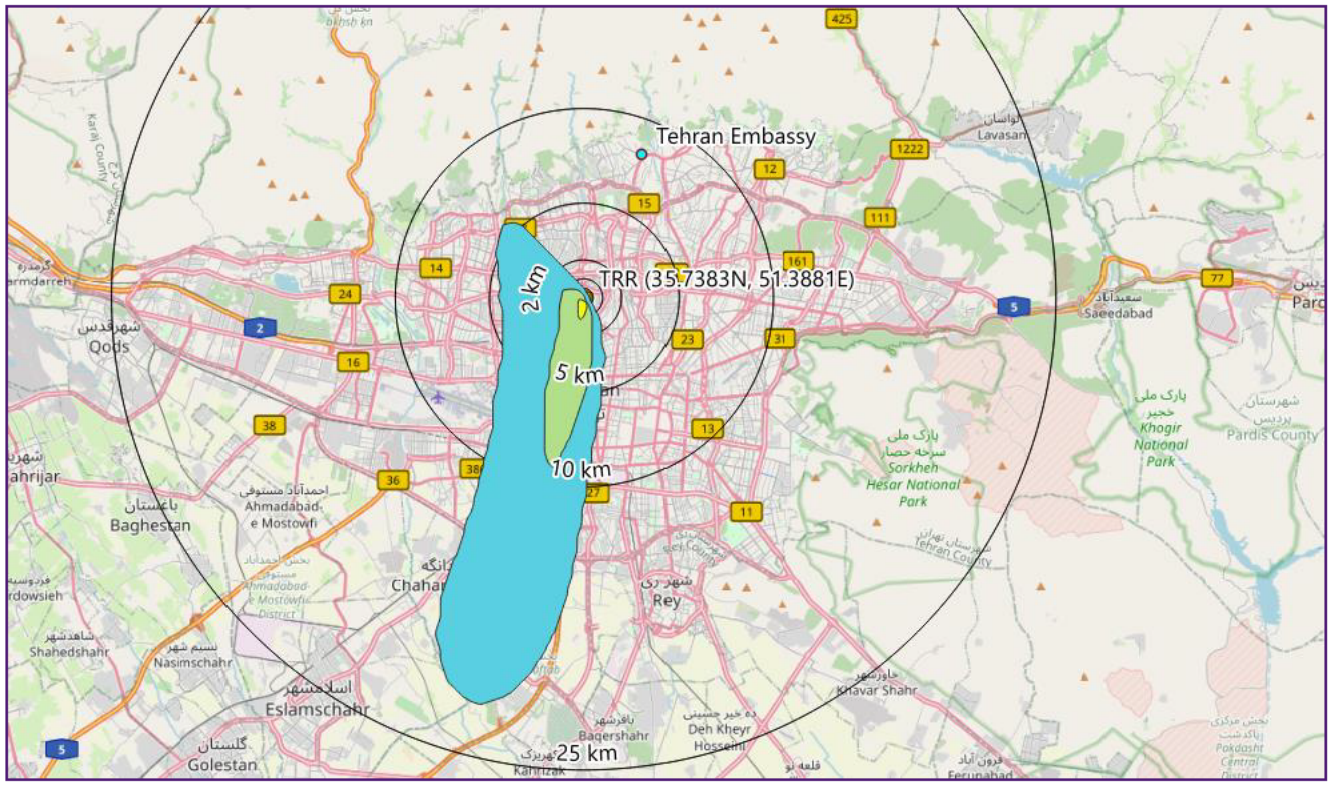
Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 3 km
Sheltering and KI Tablets: May be required up to 10 km
Food and water restrictions: May be required up to 20 km.

COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tel Aviv is very low due to the distance from the Soreq facility. In the event of an incident at this facility, it is unlikely that any protective actions would be required at these embassy locations. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

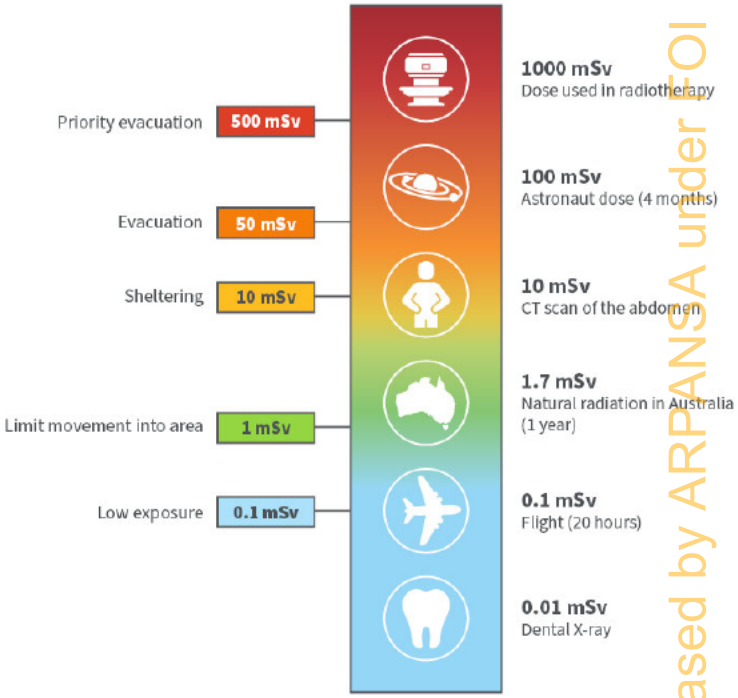
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HYPOTHETICAL RELEASE – Tehran Research Reactor in Iran



Modelled release at 13:00 AEDT 23 March 2026 Model generated at 10:00 AEDT on 23 March 2026 *Figure 7*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of a Station Black Out following loss of power after damage to plant infrastructure and backup power supply and safety systems. Reactor containment is considered damaged. Reactor power assumed to be 5 MWt.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction initially to the south of the site

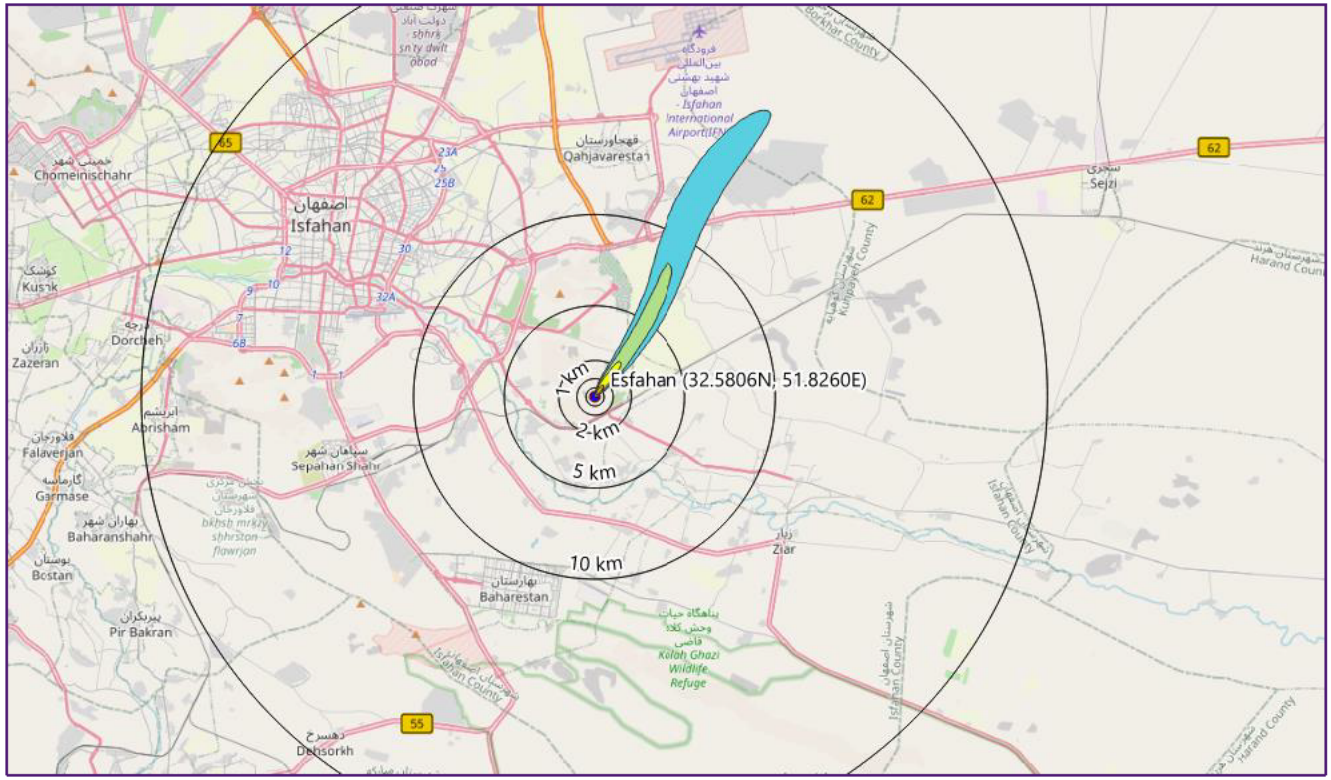
Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km from the site
Sheltering and KI Tablets: May be required up to 5 km from the site
Food and water restrictions: May be required up to 10 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low. Radiological risk at Australian embassy locations in Tehran is very low due to the distance from the Tehran facility. In the event of an incident at this facility protective actions may be required at this embassy location. In a worst-case event, staff may be instructed to shelter in place with doors and windows sealed and await further advice.
Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

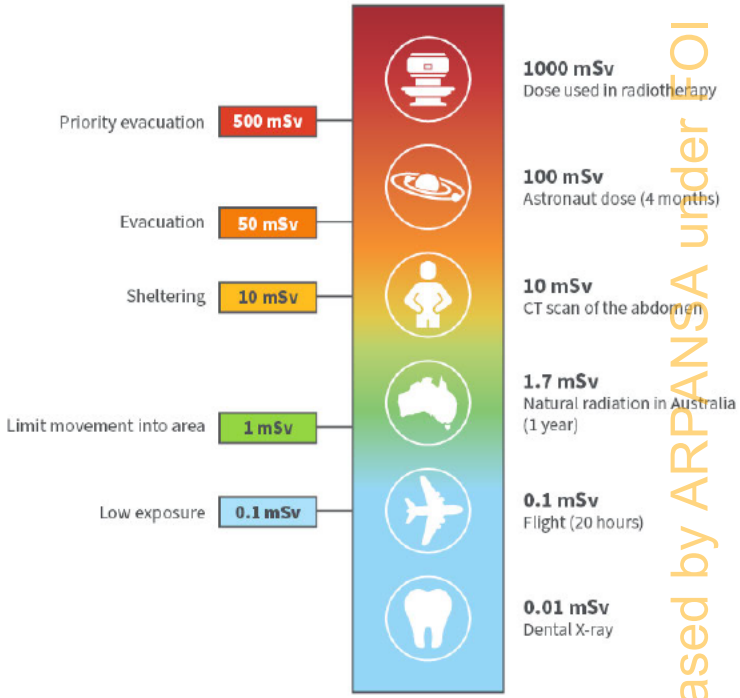
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HYPOTHETICAL RELEASE – Esfahan Nuclear Technology Centre in Iran



Modelled release at 13:00 AEDT 23 March 2026 Model generated at 10:00 AEDT on 23 March 2026 *Figure 8*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexafluoride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north and north-east of the site

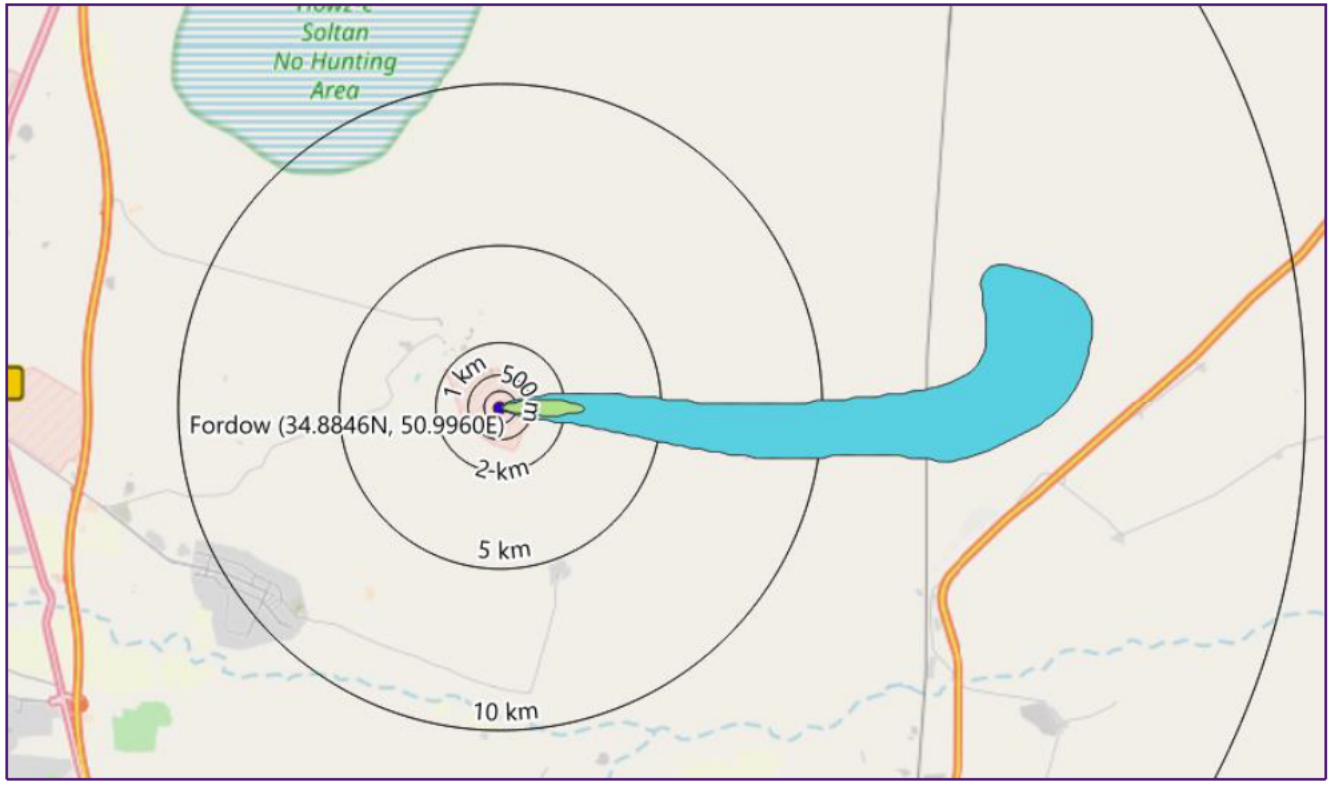
Protective actions may be advised based on a release of this nature
Evacuation: May be required up to 2 km from the site
Sheltering: May be required up to 3 km from the site
Food and water restrictions: May be required up to 3 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

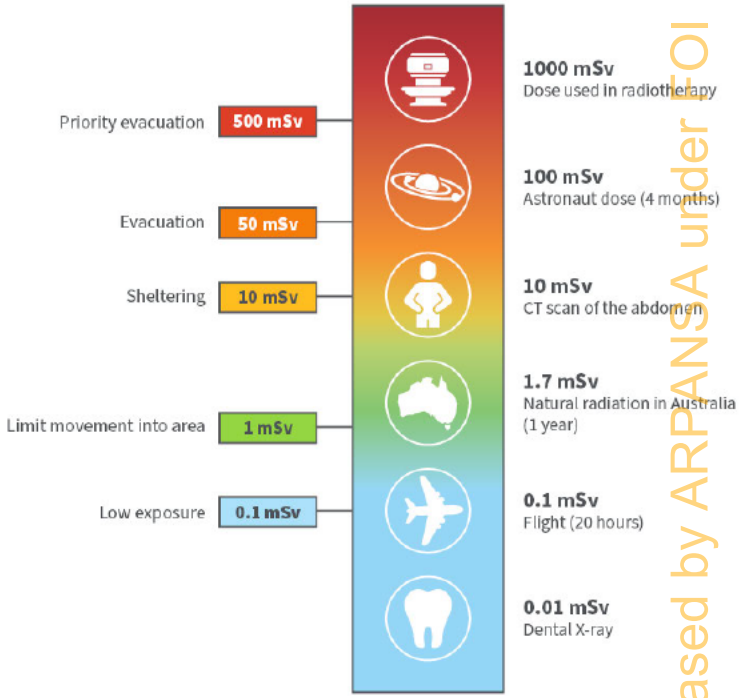
Released by ARPANSA under FOI

HYPOTHETICAL RELEASE – Fordow Nuclear Facility in Iran



Modelled release at 13:00 AEDT 23 March 2026 Model generated at 10:00 AEDT on 23 March 2026 *Figure 9*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexafluoride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the east of the site

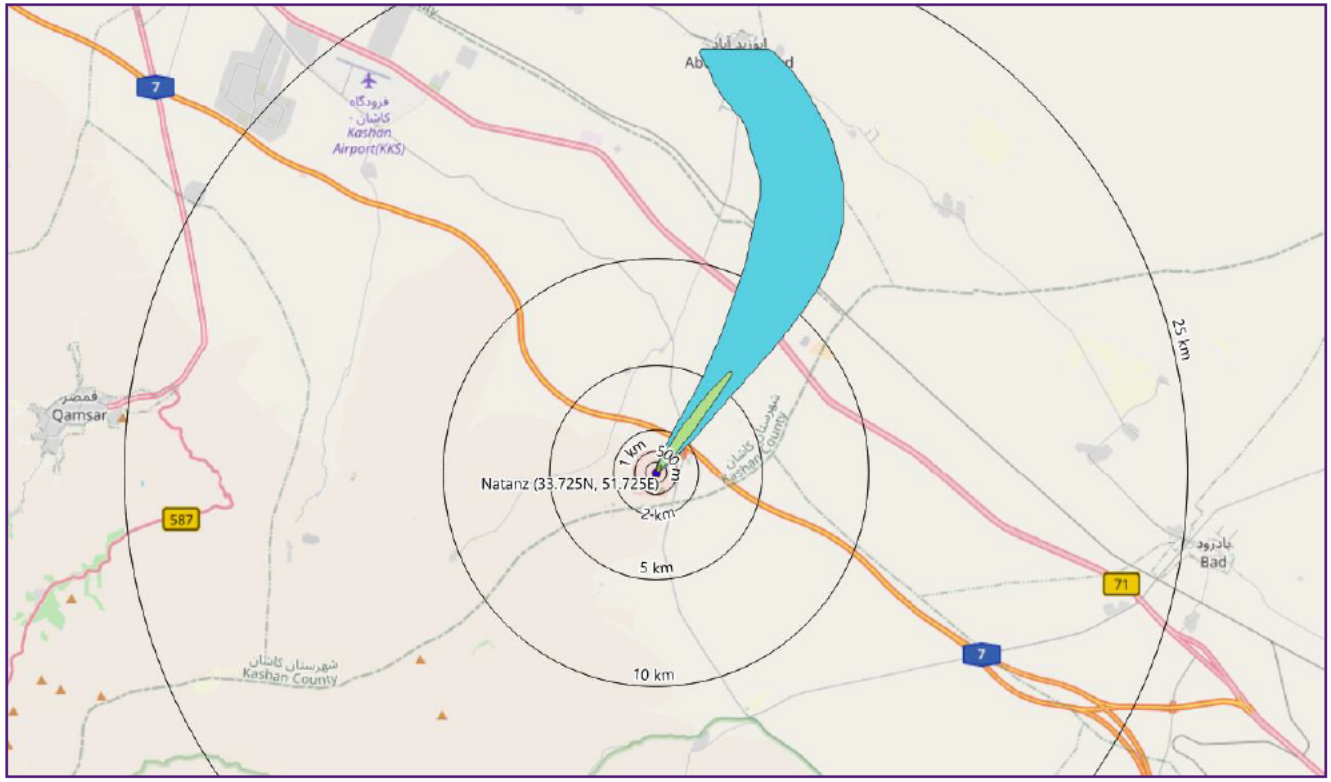
Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required
Sheltering: Not predicted to be required
Food and water restrictions: May be implemented in vicinity of the site.

COMMENTS

The simulation shows that no significant off-site radiological consequences are predicted in the event of a release at this facility. Some contamination requiring implementation of food and water restrictions may reach areas close to the site.

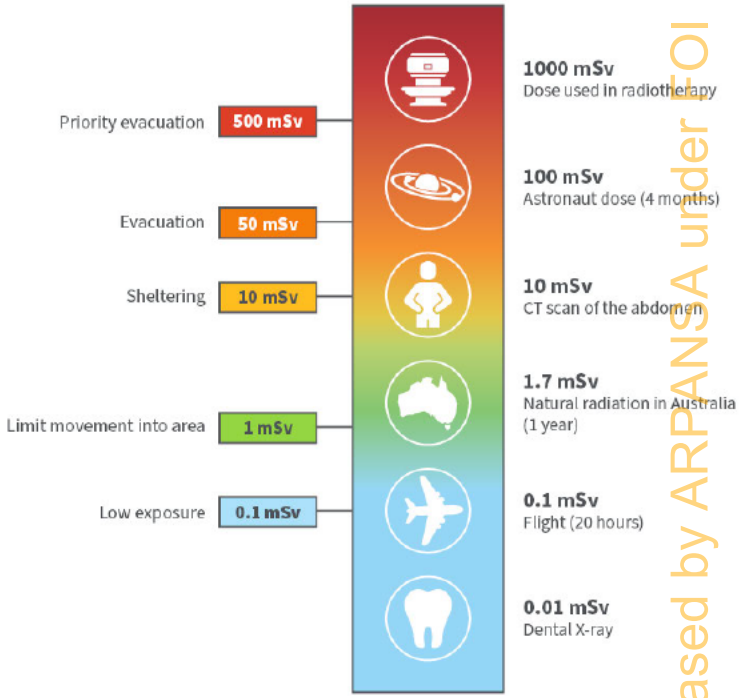
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HYPOTHETICAL RELEASE – Natanz Nuclear Facility in Iran



Modelled release at 13:00 AEDT 23 March 2026 Model generated at 10:00 AEDT on 23 March 2026 *Figure 10*

LEGEND – UNSHIELDED DOSE | COMPARATIVE DOSES



The figure estimates the total dose that may be incurred during the plume passage of the hypothetical release.

RELEASE SCENARIO

Postulated scenario of major damage and dispersal from ground level of the entire Uranium Hexafluoride stockpile estimated in IAEA verification and monitoring reports.

ASSESSMENT

Plume direction: Atmospheric modelling at this time shows plume direction to the north-east of the site

Protective actions may be advised based on a release of this nature
Evacuation: Not predicted to be required off-site
Sheltering: May be required up to 3 km from the site
Food and water restrictions: May be required up to 2 km from the site.

COMMENTS

Potential radiological exposure from this scenario is low.
In a worst-case event with very low wind speeds, sheltering may be required out to several kms from the site.
Some contamination requiring implementation of food and water restrictions may be required at further distance from the site.

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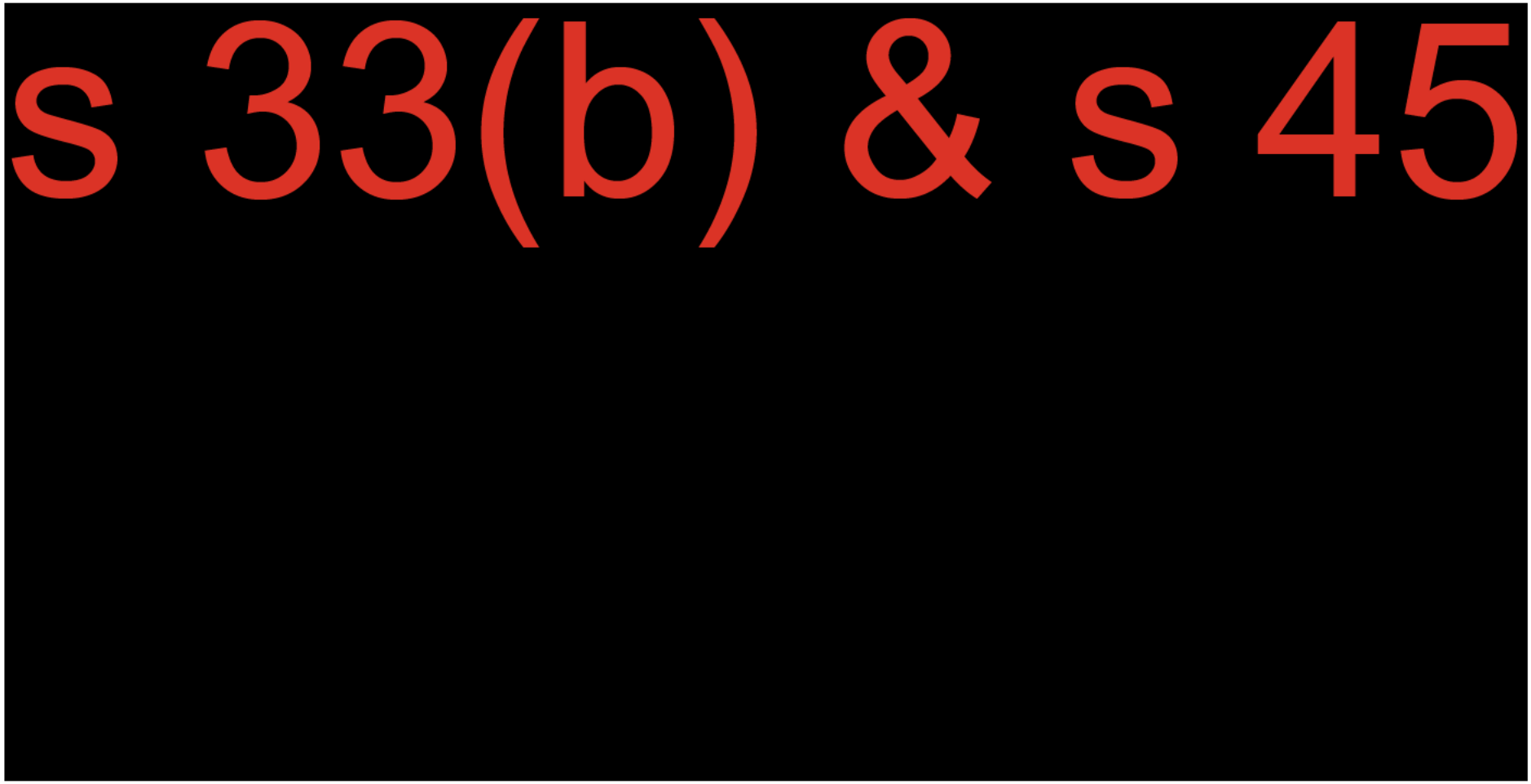


Figure 11 s 33(b) & s 45

International Radiation Monitoring Information System (IRMIS)

This network is designed to provide near real-time information and can be used to inform urgent protective actions.

A suite of gamma dose rate detectors positioned in many nations to report and visualize large quantities of environmental radiation monitoring data during nuclear or radiological emergencies. The data maps the areas of potential impact that can assist countries to take appropriate protective actions in an emergency.

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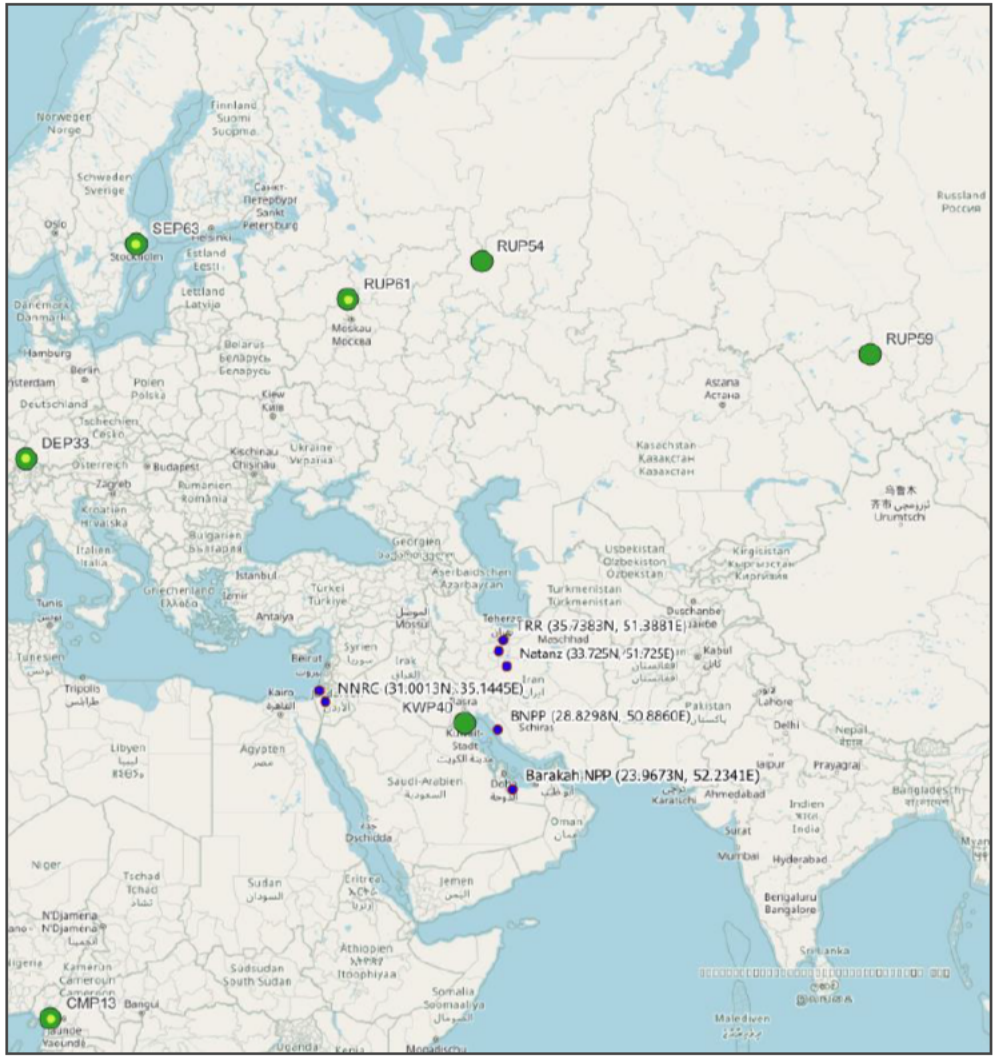


Figure 12 Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System (IMS) radionuclide detection network

International Monitoring System (IMS)

The International Monitoring System is a comprehensive global network of detectors that includes seismic, hydroacoustic, infrasound and radionuclide stations. This network is managed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and is designed to detect clandestine nuclear explosions. The IMS is more sensitive than the IRMIS network and provides different information.

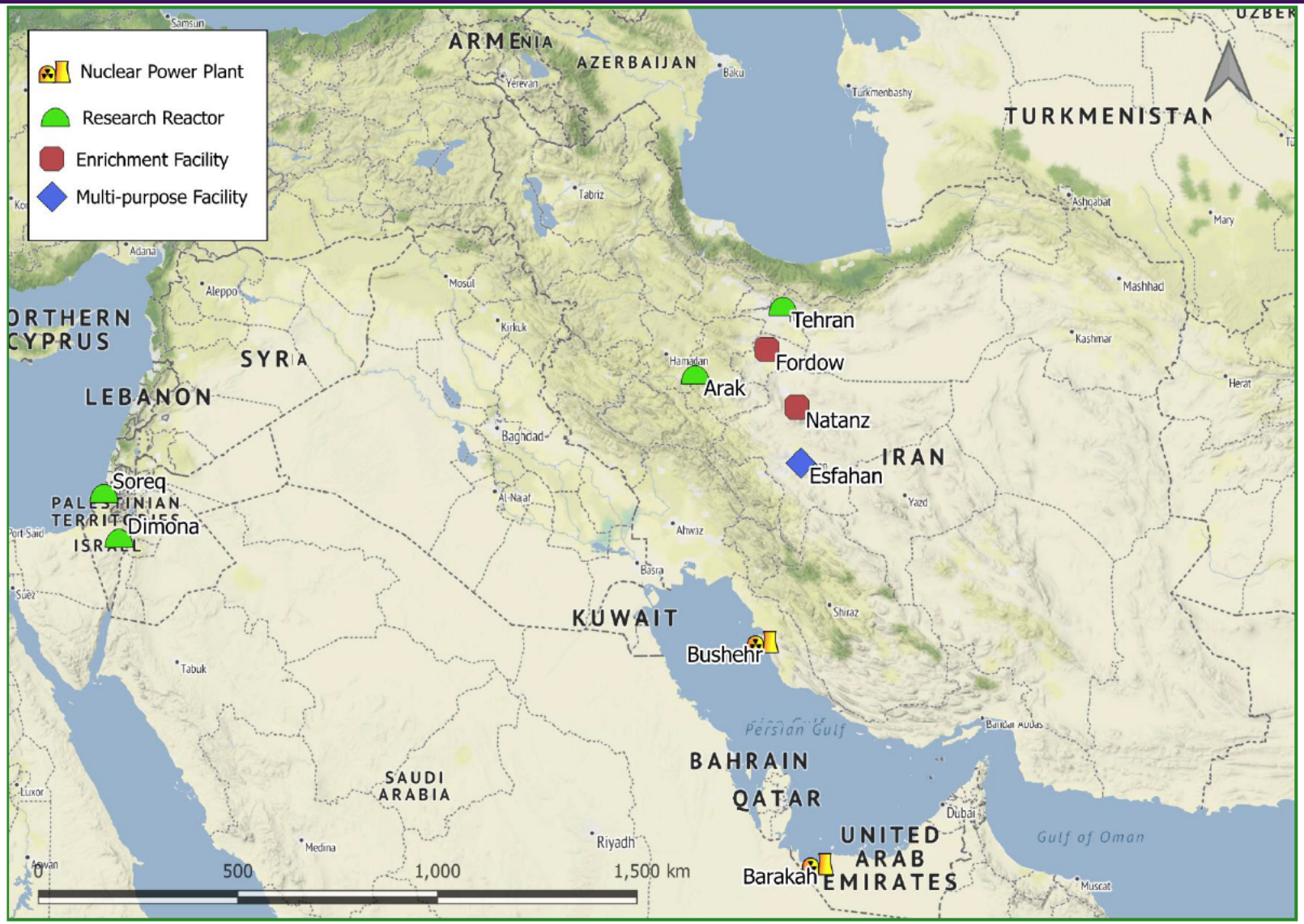
The radionuclide stations in the network can detect very low levels of radiation in the atmosphere. The closest radionuclide station in the region is located in Kuwait City, with other relevant stations in Switzerland, Russia, China, Mongolia, and the British Indian Ocean Territory.

The system is highly effective, having detected all six of North Korea's declared nuclear tests between 2006 and 2017. The network also provided valuable information during the Fukushima nuclear accident, with measurements from stations in Japan helping to identify and quantify the amount of radioactive material that reached certain locations.

If there was a significant release from a nuclear reactor, it would be detected by the IMS network. However, the measurement process takes several days, so these stations **do not provide an early warning system of a nuclear incident or provide real-time measurements to help inform urgent protective actions.**

ARPANSA acknowledges ASNO as the National Authority under Article 3 of the CTBT for the release of IMS data.

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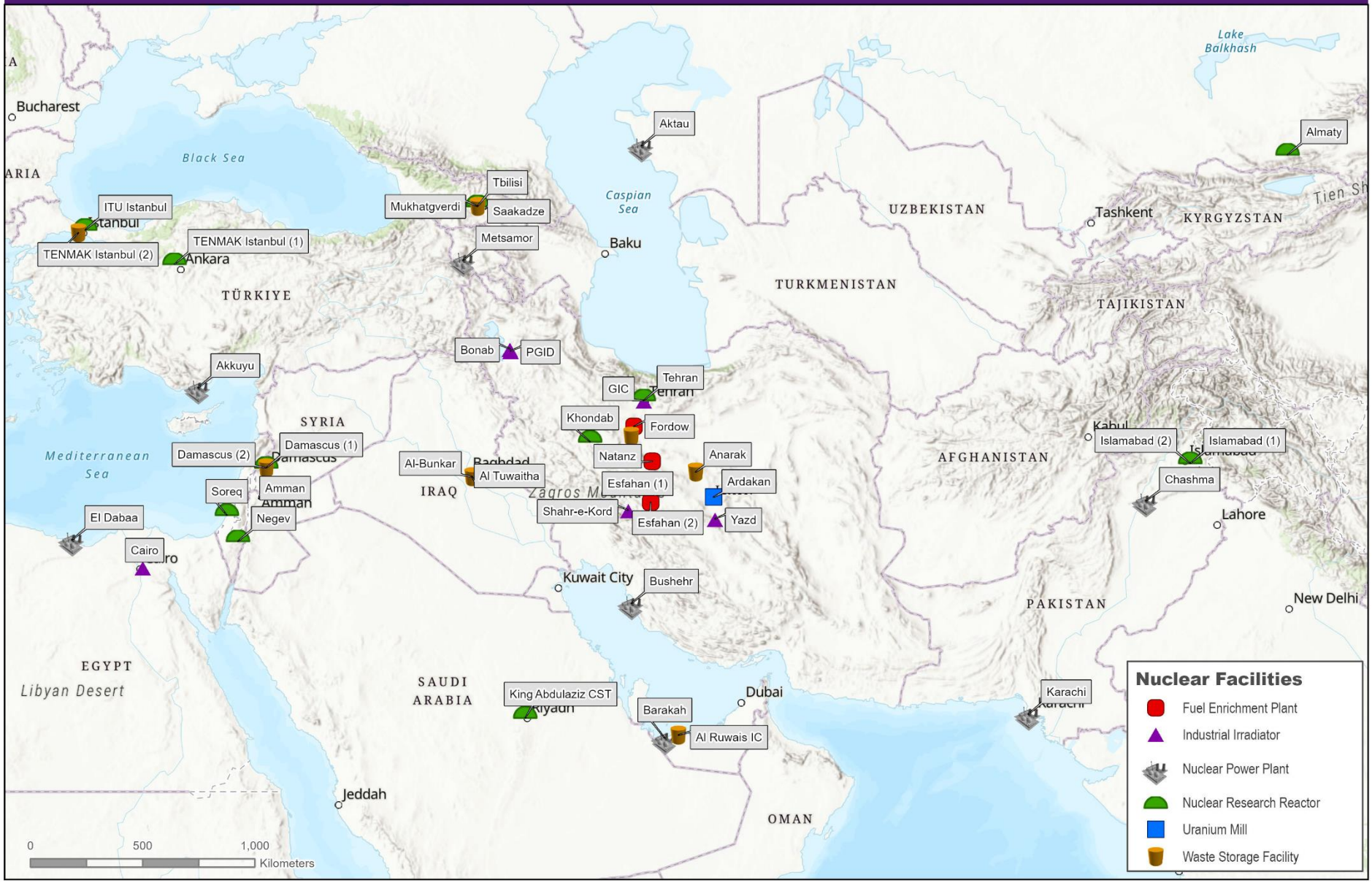
Locations of nuclear facilities in Iran and Israel, and United Arab Emirates

Figure 13

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Document 44

Middle East Region Nuclear and Radiological Facilities



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[redacted]

s 33(a)(iii)

Release by ARPANSA under FOI

s 33(a)(iii)

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s 33(a)(ii)

Release by ARPANSA under FOI

s 33(a)(iii)

Release by ARPANSA under FOI

s 33(a)(ii)

Release by ARPANSA under FOI

Document 45

s 22(1)(a)(ii)

s 22(1)(a)(ii)

22/06/2025 4:47 pm

s 22(1)(a)(ii)

some amount of LEU in UF6 form

actually they may have been storing more UF6 there

22/06/2025 5:25 pm

I will run the same scenario as for the Fordow and Natanz sites

s 22(1)(a)(ii) 22/06/2025 5:27 pm

s 22(1)(a)(ii)

yeah who knows what they have, go with the same one

s 22(1)(a)(ii)

s 22(1)(a)(ii)

Monday, 23 June 2025

s 22(1)(a)(ii)

23/06/2025 4:43 pm

looking at some spent fuel pond stuff, there is quite a lot of cesium in there

s 22(1)(a)(ii)

s 22(1)(23/06/2025 5:44 pm

As per s 22(1)(a)(ii) s comment. we can think about something on CTBT from tomorrow

though it is not designed for this purpose, and would take days to get a detection

23/06/2025 6:11 pm

maybe on the IRMIS page or after we can have a note about it

looking at the questions for rick, might need to draft up some stuff there

s 22(1)(a)(ii)

s 22(1)(a)(ii) 23/06/2025 6:22 pm

there are also a lot of air samplers that are around NPPs and research reactors. but we dont really have access to them

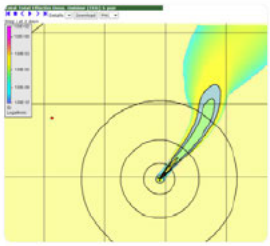
yeah maybe a note at the bottom of the IRMIS would work.
CTBT network may help to determine the magnitude of the release, but is not and early warning system that can be used to advise on protective actions

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s 22(1)(a)(ii)

s 22(1)(a)(ii) just had a look at the Tehran simulation. pretty much looks the same

Esfahan is about the same distance, but direction has changed



1/03 8:59 am

if the distances are similar we could leave the old one with the model run times from last night

s 22(1)(a)(ii) 1/03 9:01 am

yeah the only thing that would change is the image, and plume direction from East to North-east

I dont think that's worth it

s 22(1)(a)(ii) s 22(1)(a)(ii) 1/03 9:16 am

looking at the plumes, they are all more or less the same

last nights does the job

1/03 9:19 am

nice

Type a message

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[redacted]

Friday, 20 June 2025

20/06/2025 8:19 am

I saw that Australia is closing/has closed the Tehran embassy. Do we still have staff there? I will leave it and the advice for embassy staff in the brief today, we can think about adjusting in future.

s 22(1)(a)(ii) 20/06/2025 8:54 am

So we don't have staff there but leave it in for another three days. I'll speak to [redacted] about finding the trigger for removing it. There was also some good media on the Bushehr reactor in the media being just a power reactor and the environmental damage it may cause if it is bombed.

20/06/2025 9:05 am

yes we haven't looked at environmental damage but it would be a big issue following the event

[redacted]

[redacted]/06/2025 1:07 pm

Thanks [redacted] and I had a chat yesterday afternoon about the reactor and our source term research. The current source term we are using is based on work we did for the Ukraine situation, at sites with the same type of reactor

[redacted]

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