

SUMMARY OF SUBMISSIONS AND RESPONSES
DRAFT CODE OF PRACTICE FOR THE SAFE TRANSPORT OF RADIOACTIVE MATERIAL - 2008

SUBMITTER	COMMENT	RESPONSE
<p>01 Mark Sonter Radiation Advice & Solutions P/L Asteroid Enterprises P/L QLD</p>	<p>One comment only: I think it is a pity they have removed clause 305, informing rad management and monitoring NOT required for transport drivers getting below 1 mSv: this is useful guidance and should be retained.</p>	<p>Noted. 305(a) only advised that special work patterns, detailed monitoring, dose assessment programmes and record keeping was <i>not</i> required when doses are unlikely to exceed 1 mSv in a year. It is therefore a redundant sub-clause.</p>
<p>02 Nick Tsurikov Calytrix Consulting Pty Ltd WA</p>	<p>The most important clarifications are in regards to:</p> <ul style="list-style-type: none"> a) Application of limits in relation to U(nat) and Th(nat) (para 2.7 of RPS-2), b) Non-compliance issues (new para 309), c) Necessary training protocols (paras 312-314), d) Multiplication factors for large loads (Table 6), e) Measurements of radiation levels for consignments under the exclusive use (paras 567(b), 573 (b) and (c)) and exemptions for the internal surfaces for these consignments (para 514). <p>The majority of changes will be ‘machinery’ and grammatical ones and there will be little or no cost to the industry in the process of adoption of the requirements of the Code, except for one point that is addressed in comment 2 below.</p> <p>Comment 1 The clarification for para 107(e) is very appropriate, as the current definition inadvertently affects the materials resulting from processing of minerals where these minerals are treated to remove radionuclides for marketing purposes (where they are an unwanted impurity in the final product – such as removing thorium from titanium-bearing minerals).</p> <p>Comment 2 I disagree with the expression that adding “conveyances” to the list of what should be checked for surface contamination prior to transport will have a negligible impart on the industry (page 10 of the ‘Summary of differences’)</p> <ul style="list-style-type: none"> a) The definition is provided in para 214 and it states that beta, gamma and low toxicity alpha emitters may be on the surfaces in quantities below 0.4 Bq/cm² – otherwise the object should be classified as SCO-I. 	<p>Noted.</p> <p>Noted.</p> <p>This comment raises several issues and three of the submissions bring up the same or similar points.</p> <p>In order to consider these comments, it is important to note that the IAEA Regulations do not apply to certain situations. In particular, paragraph 107(e) of the 2005</p>

	<p>b) Some minerals present in small amounts on the surfaces of an object will result in this object being classified as SCO-I. Examples will be titanium and zirconium minerals (2-4 Bq/g) where an 0.5-mm thick layer of a mineral on the object's surface will result in this object becoming a "surface contaminated" one (measured levels would typically be in range between 0.6 Bq/cm² and 3.0 Bq/cm², depending on the concentrations of radionuclides in a particular material). The same may also apply to some fertilisers and other minerals.</p> <p>c) It is likely that there is not a problem for the mining and mineral processing industry to carry out checks of potentially contaminated items as they leave a particular site. To the best of my knowledge, where this practice is not yet in place – it is either currently being implemented or is planned to be implemented in the near future.</p> <p>d) However, in difference with uranium mining and processing, the surface contamination checks of conveyances are rarely carried out – typically, only in cases where a particular vehicle was either used for carrying radioactive material or was driven on the surface of such material (with an exemption provided in para 107(e) – where the limit of 10 Bq/g is exceeded). It is not a common industry practice to check each and every vehicle that could possibly become contaminated on the surface with minerals containing 2 to 5 Bq/g.</p> <p>e) The argument is not about the need for the surface contamination checks in the mining and mineral processing industry (the Code will need to be complied with) – it is about potential impacts it would have on many mining and processing sites where such checks are not routinely carried out at the moment.</p> <p>f) The industries affected would be all mining and mineral processing where materials with elevated concentrations of the naturally occurring radionuclides are mined and/or processed. Heavy mineral sands mining, separation and downstream processing can serve as an example.</p> <p>g) The possible impacts can be summarised as follows:</p> <ul style="list-style-type: none"> • Each site will have to introduce strict access controls with the manned gate, monitors will have to be purchased, and personnel trained. • Some sites already have access control (particularly downstream processing plants) and the impact will be limited to the cost of the surface contamination monitor and of the education of employees. • Other sites (mainly mining ones) do not have any access controls and 	<p>IAEA Regulations (and therefore the proposed draft Transport Code) states:</p> <p>107. The Regulations do not apply to:</p> <p>(e) natural material and ores containing naturally occurring radionuclides that are either in their natural state, or have been processed only for purposes other than for the extraction of the radionuclides, and that are not intended to be processed for use of these radionuclides, provided that the activity concentration of the material does not exceed 10 times the values specified in para. 401(b), or calculated in accordance with paras 402–406;</p> <p>That being the case, the 2005 IAEA Transport Regulations, and therefore a 2008 Transport Code, DO NOT APPLY to the transport of mineral sands containing naturally occurring radionuclides below those levels. Consequently, contamination checks do not need to be carried out under paragraph 509 of the proposed Transport Code. The cost of the addition of <i>and conveyances</i> to paragraph 509 for these industries is therefore zero.</p> <p>It should be noted however that de-contamination of vehicles for these industries might be required under separate environmental or radiation protection legislation, but not the Transport Code.</p> <p>Mr Tsurikov implies (his comment (d)) that contamination checks are already carried out in the uranium mining and processing industry and therefore the cost of the addition of <i>and conveyances</i> in para 509 would be minimal, as assessed.</p>
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	<p>several (up to 8-10) different points of entry/exit may exist – in these cases the impact may be quite serious as the whole system of control (including manned boom gates and/or huts), access rules, personal entry passes will have to be designed and implemented.</p> <ul style="list-style-type: none"> • The implementation of access controls and surface contamination checks may influence the way in which the sites are operated and result in potential delays in the transport of goods (particularly in cases when the material is carried by rail and the train consist of over 50 carriages that all will need to be checked). • There also may be safety issues when a road train is checked prior to leaving site and some surfaces found to be contaminated. As a very long road train (over 50 meters in length) cannot simply back up – additional (and, in some cases, quite significant) road works would be required. • The sites may also have to be re-designed to ensure that dust from mining/processing operation does not reach employees’ car parks – to ensure that private vehicles are not accidentally contaminated. • The issue associated with employees’ vehicles is the ‘pollution exclusion’ in most (if not all) vehicle insurance policies – which are typically not covering both industry and the public in case of anything to do with ‘radiation’. I will need to carry out an additional study of potential impacts but it is clear that some unwelcome implications are possible. • The introduction of surface contamination checks on entrances to the mining/processing sites may also have a significant impact on any public relation programs run by individual companies, particularly where these sites are located relatively close to residential areas. 	
<p>03 John Symonds Director, Nijelo Pty Ltd NSW</p>	<p>The various changes, clarifications, and additions to the existing Australian Code of Practice 2001 have been studied to decide what effects these might have on transportation work done under consultancy operations in Australia. Because much of the work to date had been done on the international as well as the Australian scene, we have had to keep up to date on the IAEA Regulations as they stand up to 2007, acquiring the most up to date versions for both the IAEA and associated international regulations for road, air and sea transport.</p> <p>In view of these international operations, little cost of implementing the proposed 2008 Australian Transport Code is considered appearing, apart from obtaining that new Code and associated documents. The various changes appear to make the wording of the Code more readily understood.</p>	<p>Noted.</p>
<p>04 Garry Fee</p>	<p>SUBMISSION ON DRAFT CODE OF PRACTICE FOR THE SAFE TRANSPORT OF RADIOACTIVE MATERIAL (2008)</p>	

<p>Operations Manager Radiation Safety Officer Bemax Resources Ltd</p>	<p>Thank you for providing us with the opportunity to comment on the Draft Code of Practice for the Safe Transport of Radioactive Material (2008). Whilst overall the changes to the Code provide clarification and will have negligible effect on mineral sands mining. One of the proposed changes causes us significant concern, paragraph 509, which adds conveyances to items that require control of non-fixed contamination.</p> <p>Bemax Incorporating Cable Sands is a mineral sands mining company with operations in the South West of Western Australia. Operations include a Mineral Separation Plant at North Shore, Bunbury and two operating minesites. One of Bemax's rehabilitation sites is also utilised for disposal of tailings from the MSP. Small amounts of titanium and zircon rich minerals (1 - 2 Bq/g) on the surface or within an object may result in it being classified as surface contaminated. As such, the requirement to ensure all conveyances have levels below 0.4Bq/cm² would require that all conveyances coming into contact with mineral stockpiles would need to be checked prior to exiting Cable Sands sites.</p> <p>Whilst it is common practice to check items leaving site for surface contamination, i.e. scrap steel or equipment leaving the company. It is not common practice in mineral sands mining and processing and certainly not at Bemax sites to check vehicles, trucks or other conveyances for contamination prior to them exiting our sites.</p> <p>The logistics of instigating these checks will require significant financial and manpower resources. Potential impacts of undertaking the changes as outlined include:</p> <ul style="list-style-type: none"> ➤ Implementation of site access controls at mine sites ➤ Purchasing of monitoring equipment and training of personnel (whilst equipment is currently available, additional equipment would be required to ensure that all sites have adequate equipment on hand) ➤ Impacts at North Shore MSP would include <ul style="list-style-type: none"> ○ Employment of additional personnel to provide 24/7 gate coverage enabling checks to be undertaken ○ Construction of Wash-down bay for removal of surface contamination in excess of limits ○ Trucking and shipment delays - heavy shipping schedules in the order 	<p>This issue has already been dealt with under submission 02 above. As noted, Paragraph 107(e) of the 2005 IAEA Regulations (and therefore the proposed draft Transport Code) states:</p> <p>107. The Regulations do not apply to:</p> <p>(e) natural material and ores containing naturally occurring radionuclides that are either in their natural state, or have been processed only for purposes other than for the extraction of the radionuclides, and that are not intended to be processed for use of these radionuclides, provided that the activity concentration of the material does not exceed 10 times the values specified in para. 401(b), or calculated in accordance with paras 402–406;</p> <p>That being the case, the 2005 IAEA Transport Regulations, and therefore a 2008 Transport Code, DO NOT APPLY to the transport of mineral sands containing naturally occurring radionuclides below those levels. Consequently, contamination checks do not need to be carried out under paragraph 509 of the proposed Transport Code. The cost of the addition of <i>and conveyances</i> to paragraph 509 for these industries is therefore zero.</p> <p>It should be noted however that de-contamination of vehicles for these industries might be required under separate environmental or radiation protection legislation, but not the Transport Code.</p>
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of 400 trucks exiting the site in a 24 hour period, will suffer from increased delays required for the contamination checks to be completed. There is also considerable potential for trucking costs to rise through the additional time required for checks will reduce trucking rates. Truck movements are in the order of 12 000 /yr for incoming mineral and exiting tails material, with an additional 5000 - 10 000 / yr for product exiting the site to customers or ships. The financial cost of increased delays caused by these checks will be significant.

- Public relations impact - with operations located in a relatively densely populated regional centre, additional checks may cause community concerns over the risk radiation poses.
- Impacts at Mine Sites would include
 - Employment of additional personnel during trucking campaigns to provide gate coverage
 - Construction of wash-down bay for removal of surface contamination in excess of limits
 - Trucking delays which may lead to increased trucking costs.

Bemax estimates the financial costs as follows:

North Shore Establishment	\$23,800 - 53,800
North Shore Annual Operating Cost	\$243,000
Mine Sites Establishment	\$71,250- 161,250
Mine Sites Annual Operating Cost	\$109,000
Total Bemax Establishment	\$95,050 - 215,050
Total Bemax Operating Cost	\$352,000

ARPANSA expressed the opinion that "it is not expected that there would be any significant costs to businesses involved in the transport of radioactive material as they would already be complying with the 2001 Code". As evidenced by the above budget estimates, which are conservative, there would be significant costs associated with implementing the changes outlined in paragraph 509 of the code.

Whilst we have no issue with the concept of checking conveyances for surface contamination we question the necessity for such checks in a low risk

	<p>environment such as mineral sands mining, given the significant resources it would require to instigate such checks.</p> <p>If ARPANSA continues to feel strongly for the need for these checks on conveyances, we suggest that companies be given the opportunity to conduct monitoring programs to determine (a) the risk associated with surface contamination of these vehicles and (b) the logistical and financial resources that would be required to meet these changes to the transport code. The aim being to enable an exemption limit to be developed for low risk activities as we believe much of our operations will be, or secondarily to enable affected companies to develop effective and efficient means of employing checks to minimise impacts on operations.</p>	
<p>05 CONFIDENTIAL SUBMISSION</p>		
<p>06 Kent Gregory Senior Medical Physicist Department of Medical Physics Royal Adelaide Hospital North Terrace ADELAIDE SA 5000</p>	<p>I have not read the draft transport code thoroughly, but it looks very similar to the current code. It is no doubt based on sound scientific principles like its predecessors, but it is a nightmare of a document to read and get information from quickly.</p> <p>Rather than redraft the Code, I suggest that ARPANSA simultaneously release a Transport Guide as a companion document to the Code. The Guide should be much shorter than the Code, and cover the transportation requirements for the most common rad materials used by industry, medicine and science. It has been noted that a lot of the Code covers fissile material, SCO's, and other very specific cases that I imagine represent a very small fraction of the total number of packages shipped around Australia. In my experience, a large proportion of Australian shipments are represented by:</p> <ol style="list-style-type: none"> 1. Am241/Be, Co60 and Cs137 sealed sources (fixed and portable gauges) 2. U Nat (uranium product) 3. Ir192 sealed sources (radiotherapy and NDT) 4. I131 unsealed (radiotherapy), and 5. Tc99m (for nuc med). <p>The Guide should be able to provide the reader with a quick answer on what is required to transport each of these radionuclides. A flowchart may be one way this could be achieved. Footnotes could lead the reader to further details in the Code. Other radionuclides, like P32, Ru106, Sr89, etc could be included if there was room.</p>	<p>Noted. A Safety Guide that references the proposed 2008 Transport Code is already in preparation. It is expected that this Safety Guide will be published in the first quarter of 2008 (after the Transport Code). It is largely based on a similar version published in 1982 and includes the Schedules that were published in the 2001 Transport Code but have been removed from this version (due to a change in the IAEA Transport Regulations).</p>

	<p>Unless there has been a considerable change to the number of staff in ARPANSA's Regulatory and Policy Branch recently, I would strongly recommend that ARPANSA contract an external body to produce the Guide.</p> <p>The Guide should also contain current information regarding the transportation of rad materials in each State and Territory. For example, some States license rad material transport companies, while others do not. As a State regulator, this is a very common question received from transporters.</p>	
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