## RAMQC Questions and Answers

**Q 1. What is RAMQC?**

A 1. AMQC is an acronym for Radioactive Material in Quantities of Concern. RAMQC refers specifically to 16 radioactive materials (fourteen single radionuclides and two combinations). These materials are: Americium-241; Americium-241/Beryllium; Californium-252; Curium-244; Cobalt-60; Cesium-137; Gadolinium-153; Iridium-192; Plutonium-238; Plutonium-230/Beryllium; Promethium-147; Radium-226; Selenium-75; Strontium-90 (Yttrium-90); Thulium-169; and Ytterbium-169. RAMQC does not include spent fuel.

**Q 2. What prompted this new category of material called RAMQC?**

A 2. The attacks of September 11, 2001, made everyone re-think how far a terrorist would go to hurt the public. This included reconsidering how a terrorist could use medical and industrial radioactive materials to cause harm. The NRC and the international community, led by the International Atomic Energy Agency (IAEA), took another look at medical and industrial radioactive materials with this as its main consideration. As part of this effort, the NRC reviewed the chemical, physical, and radiological characteristics of radioactive material for its attractiveness to a terrorist. This effort identified 16 radioactive isotopes and combinations of isotopes that could pose a serious threat. This effort further defined different quantities or "thresholds" of materials that could be useful to a terrorist. The IAEA published their results in a document titled "Code of Conduct on the Safety and Security of Radioactive Sources." A link to this document is found on the NRC website at NRC: Security Enhancement Activities.

After the Code of Conduct was developed, the NRC referred to these 16 radioactive materials as "Radioactive Materials in Quantities of Concern" or RAMQC.

**Q 3. What are the RAMQC thresholds?**

A 3. The RAMQC thresholds are provided in the table below.

| Radioactive Material | Category 1 | | Category 2 | |
|---|---|---|---|---|
| | Terabequerels (TBq) | Curies (Ci) | Terabequerels (TBq) | Curies (Ci) |
| Americium-241 | 60 | 1,600 | 0.6 | 16 |
| Americium-241/Beryllium | 60 | 1,600 | 0.6 | 16 |
| Californium-252 | 20 | 540 | 0.2 | 5.4 |
| Curium-244 | 50 | 1,400 | 0.5 | 14 |
| Cobalt-60 | 30 | 810 | 0.3 | 8.1 |
| Cesium-137 | 100 | 2,700 | 1.0 | 27 |
| Gadolinium-153 | 1000 | 27,000 | 10.0 | 270 |
| Iridium-192 | 80 | 2,200 | 0.8 | 22 |
| Plutonium-238 | 60 | 1,600 | 0.6 | 16 |
| Plutonium-239/Beryllium | 60 | 1,600 | 0.6 | 16 |

| | | | | |
|---|---|---|---|---|
| Promethium-147 | 40,000 | 1,100,000 | 400 | 11,000 |
| Radium-226 | 40 | 1,100 | 0.4 | 11 |
| Selenium-75 | 200 | 5,400 | 2.0 | 54 |
| Strontium-90 (Yttrium-90) | 1,000 | 27,000 | 10.0 | 270 |
| Thulium-170 | 20,000 | 540,000 | 200 | 5,400 |
| Ytterbium-169 | 300 | 8,100 | 3.0 | 81 |

Terabequerels are the official value to be used for determining whether a material is a Category 1 or Category 2 quantity. Curies are provided for practical usefulness only and are rounded after conversion.

**Q 4. What is the scope of these public meetings?**

A 4. The NRC is planning to revise its requirements for licensees securely transporting RAMQC. The first step in this process is for the staff to prepare what a "technical basis." The "technical basis" is a document that identifies what improvements are needed in the regulations.

These public meetings are limited to discussion of transportation security for RAMQC. The staff is interested in gathering stakeholder opinion and recommendations in this area.

**Q 5. Is this the only opportunity for the public to provide comment on this policy change?**

A 5. No, there will be another opportunity for the public to provide comment on this policy change. Once the "technical basis" is complete, the staff will then prepare a "draft proposed rule" that identifies the proposed language for the regulations. The draft proposed rule will be published for public comment. After all the public comments on the draft proposed rule are resolved, the final rule will be published.

**Q 6. What doesn't this policy change cover?**

A 6. This policy change will not address air and water transport. Transport of this material within airports and by air is regulated by the Federal Aviation Administration. Transport of this material within ports and by waterway is regulated by the U.S. Coast Guard.

This policy change will not address transshipments of this material through the U.S. Transshipments are shipments that originate by a foreign company in one country, pass through the United States and then continue on to a company in another country. The NRC does not regulate these shipments because there is no NRC licensee involved in this activity. Transshipments are regulated by the Department of Transportation and Department of Homeland Security.

**Q 7. Will these meetings discuss spent fuel shipments?**

A 7. These meetings will not address transport of spent fuel. Spent fuel transportation is being handled under a separate rulemaking effort.

**Q 8. Will these meetings address fingerprinting for access to radioactive material?**

A 8. These meetings will not address the Energy Policy Act of 2005 (EPAct) requirement for fingerprinting of individuals with access to radioactive material. The NRC will address the EPAct requirement for fingerprinting under a separate rulemaking effort.

**Q 9. Why is the NRC holding stakeholder meetings?**

A 9. The NRC is holding these stakeholder meetings to ensure the public is given adequate opportunity to comment on issues related to increased transportation security requirements for shipments of RAMQC. Public comments will be used to help develop the technical basis for the RAMQC transportation security rulemaking effort.

**Q 10. Who can participate in these meetings?**

A 10. Any member of the public at large, industry groups, government officials (federal, state and local), and NRC licensees may participate.

**Q 11. Why is the NRC planning to revise its requirements in this area?**

A 11. Prior to 9/11, NRC requirements focused on safety and preventing inadvertent or accidental exposure to both workers and the public by these materials. These requirements also provided security for the material. However, the events of 9/11 made NRC take a broader look at its requirements and re-evaluate what a terrorist might do to attain these materials with the intention of harming the public. From this effort, the NRC identified several areas where additional requirements could be implemented to improve transportation security.

**Q 12. What actions has NRC taken to improve transportation security in this area?**

A 12. The NRC has issued both security advisories and Orders to its licensees to improve transportation security in this area.

**Q 13. What is an NRC advisory?**

A 13. An NRC advisory recommends areas for improvement to licensees. Immediately after the events of Sept. 11, 2001, the NRC issued security advisories to licensees and requested that they implement additional security measures on their shipments of RAMQC. The NRC advisories contained specific security upgrades and are not publicly available. Licensees understood the need for additional security and implemented the measures as requested.

However, an NRC advisory is not legally binding and does not carry the weight of a regulation or Order. The NRC cannot impose penalties if a licensee doesn't meet the recommendations of an NRC advisory.

**Q 14. What "legally-binding" actions did NRC take?**

A 14. The Atomic Energy Act of 1954, as amended, authorizes the NRC to impose requirements on commercial users of radioactive materials by two methods, either through regulations or by issuing an Order. The NRC can impose penalties when a licensee doesn't meet a requirement of the regulation or an Order. An Order carries the same legal authority as a regulation.

The NRC issued legally binding Orders to licensees transporting RAMQC in 2005. These Orders required licensees to put in place additional security measures in addition to the existing NRC regulations when transporting RAMQC. The Orders issued to licensees transporting RAMQC Category 2 are available on our public website at http://www.nrc.gov/security/byproduct/orders.html.

The Orders issued to licensees transporting RAMQC Category 1 are designated Safeguards Information and are not publicly available.

**Q 15. Is everything that was Safeguards Information going to be public?**

A 15. No. The Orders issued to licensees contained detailed security information that could be useful to an adversary if made public. In order to increase public awareness and participation, NRC staff identified the primary security concepts behind each security measures in order to be able to discuss the security measures in a public forum. Once the new rule is published, the detailed security measures employed by each licensee will be safeguards information or safeguards information-modified.

**Q 16. Why is the NRC publicly revising its policy now?**

A 16. The legally binding Orders issued by the NRC could stay in place indefinitely. Because the Orders are Safeguards Information, this does not meet the NRC commitment to maintain openness and to provide the public an opportunity to comment on policy changes. The NRC is interested in keeping the public informed and highly values public involvement in our process.

Assured that additional security (because of existing regulations and Orders) is in place during transport of this material, the staff is now planning to more formally revise its policy and gather public and stakeholder input in this area. The staff will begin this process by using the additional security measures developed as the basis for these discussions.

**Q 17. Why is this material being shipped?**

A 17. In general, RAMQC is shipped to medical institutions, companies that support medical and academic institutions, and companies that manufacture and distribute radioactive material for various industrial applications. As radioactive sources get older, radioactive decay takes place and their strength decreases. Sources lose their effectiveness and have to be replaced or replenished periodically with new sources and older sources must be transported for disposal.

Another, much less transported type of RAMQC is large scale plant equipment (i.e. steam generators and reactor vessels) from commercial power plants.

**Q 18. How is the public protected from these shipments?**

A 18. Regulating transport of radioactive material is a joint responsibility of the NRC and the DOT.

The quantities of RAM being considered as part of this policy change, in general, are transported in packages (casks) that meet rigorous NRC safety standards. The packages are referred to as “Type B” packages in both NRC and DOT regulations. The NRC fact sheet on transportation of radioactive materials can be found at http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/transport-spenfuel-radiomats-bg.html.

In addition to the existing regulations, the NRC imposed additional security measures by Order on licensees. In general, the objectives of these Orders are to: a) enhance control over the material and b) prevent malevolent use of the material. The Orders address the following attributes: a) pre-planning and coordination of shipments; b) control, monitoring and communications during shipments; and c) procedures, training and control of security information.

The carrier transporting RAMQC must also meet the DOT's requirements for shipment of the radioactive material. A link to DOT is provided on NRC's website at http://www.nrc.gov/materials/transportation.html.

**Q 19. How does the NRC ensure shippers are following its rules?**

A 19. The NRC and Agreement State inspectors are aware of the intent of the additional security measures, have received training to ascertain whether shippers are meeting security requirements, and have conducted licensee inspections. These inspections are guided by in-place procedures. The NRC also instituted a security findings review panel, which reviews inspection findings to ensure consistency in the inspection and enforcement process.

**Q 20. What is the timeline for implementing a new rule in this area?**

A 20. The technical basis is scheduled for completion in Spring 2008. The draft proposed rule is scheduled for publication in the Spring of 2009. The new rule is expected to be published in 2010.