

SHIPMENT OF TENORM OUT-OF-STATE

ISSUE: Shipment of regulated TENORM from an Agreement State to a non-Agreement State which does not regulate TENORM.

LIABILITY CONCERNS: The handling of low levels of radioactively contaminated materials by persons not authorized or trained in the hazards has particular liability concerns.

What if a company wants to ship TENORM from one state to a vendor in another state that is a non-Agreement State? The TENORM is licensed because the Agreement State and many other states feel certain controls should be implemented by the user for worker protection and prevent contaminating the environment. This gives it a slightly higher risk category. And, if going to another state that may not regulate TENORM, what does one do?

AEC has presented several talks to corporations about evaluating risk, especially as it pertains to radiation. And the concept of: “RISK = HAZARD X OUTRAGE”, we feel could apply. For example, if a company spills a 55-gallon drum of sulfuric acid, chances are, it wouldn’t be on the front page of the newspaper. However, if one has a load of radioactive materials (TENORM) in a wreck, lost some radioactive materials, or a person that handles it comes down with cancer and claims it was from the TENORM, the work of the company has just started. It will hit the front page and the company will be “guilty” until proven innocent. The company will be placed on the defensive and need to “prove the negative”.

So, what does a company do to reduce our risk? It takes prudent steps to mitigate it as much as possible. When it comes to RISK MANAGEMENT, there are things “**WE KNOW**, things **WE DON’T KNOW**, and things **WE DON’T KNOW WE DON’T KNOW.**” The company’s goal should be to minimize the last item as much as possible while taking into consideration costs and time.

THINGS **WE KNOW** AND **THINGS WE DON’T KNOW**:

1. **THINGS WE KNOW:** An Agreement State most likely regulates the handling, disposal and shipment of the materials via regulation, license or policy. There is also a requirement in the Agreement State regulations that a licensee can ship licensed amounts of radioactive materials only to another licensee. **THINGS WE DON’T KNOW:** There may be concern that when the TENORM is shipped, the originating Agreement State may want to see the license of the recipient (which there may be none). **RECOMMEND** that be addressed when necessary, directly with the Agreement State.
2. **THINGS WE KNOW:** Some non-Agreement States (means they don’t regulate those typical categories of radioactive materials since the NRC regulates it for them) may regulate TENORM in various degrees. The non-Agreement State lets the NRC perform the primary regulatory functions of some types of radioactive materials. The non-Agreement State may choose not to regulate TENORM (*if located in the heavy Oil & Gas region which has TENORM issues, for example*).

3. THINGS WE KNOW: The USNRC regulates BY-PRODUCT MATERIALS, SOURCE MATERIALS, and SPECIAL NUCLEAR MATERIALS (SNM).

BY-PRODUCT MATERIALS are man-made from a reactor from separation of mixed fission products or through irradiation, i.e. making something non-radioactive into radioactive material by “activating” it via neutron bombardment.

SOURCE MATERIALS are >0.05% by weight of natural uranium or thorium. A material is considered “source” material because it is a potential source of SPECIAL NUCLEAR MATERIALS if it goes through enrichment to increase the proportion of a more fissionable isotope.

SPECIAL NUCLEAR MATERIALS are those materials that will fission upon receipt of a neutron. Only the NRC can license a “critical mass” of SNM sufficient to create a chain reaction or a bomb. Notice what is left out, the NRC does not specially regulate TENORM. It is naturally occurring and not SOURCE materials. So, they simply provide guidance to the Agreement States and Non-Agreement States.

WHAT IS A SHIPPING PLAN?

1. REQUIRED: Since the company is putting regulated amounts of TENORM on the public highway as classified by the originating state, it must be packaged according to USDOT HAZMAT regulations. The company will need to know how much volume, radiation levels and whether you are shipping less-than-truckload (LTL) quantities or an Exclusive-Use shipment. The 4-hour TENORM training course provides this guidance.

2. RECOMMEND: Provide some type of **Right-To-Know (R-T-K)** training for the recipient. Also, if the R-T-K document gets it to the recipient before they receive the shipment, it will give them time to review and ask questions. The shipper may want to have a discussion with the receiving vendor and their employees up front to avoid anxieties.

3. RECOMMEND: Provide a list of PPE that should be used. Since they do not have the training to use a survey meter, nor are they required have one on site, they should wear at least tyveks with gloves. Emphasize no eating, drinking, smoking where cloths are handled and no exposure of this material to wounds. At the completion of the work, simply dispose the PPE with the TENORM debris.

4. RECOMMEND: Advise handling the TENORM as they would another type of hazard such as lead or even asbestos. Additional PPE may be required, depending on what they are going to do with it. For example, if they are going to anneal or heat the objects for remediation creating dust, some type of venting would be appropriate. And, if workers are around it, simple dusk masks may be sufficient.

5. RECOMMEND: When ready to dispose, ask the vendor to package and take to a landfill, if that is the decision. This brings up a recommendation that may be different from your preference. It is recommended to have the TENORM debris and the tyveks and paraphernalia

that the lab used be returned to the shipping company. It's a little more expensive but avoids any question that the shipping company attempted to minimize public exposures and dispose of the TENORM debris in a manner consistent with their State of origin. If you are not going to have them returned, ask the vendor to have the materials dispersed throughout their dumpster before it goes to the landfill.

6. RECOMMEND: After completion, ask the point of contact at the vendor to have a discussion of their experience. If there are any lingering concerns, the company may want to know about them. And, while it is fresh in their minds, the company are available to assist in their understanding and clarifying any miscues.

One final comment, the shipping company should be the primary contact with the receiving vendor if there are any concerns, questions or problems. The company's site RSO should be a primary contact. If the receiving vendor has concerns regarding their own workers' exposures, recommend them completing one of the TENORM training courses to better understand their hazard and risk.

