DCD (SP03)

RE: SP-99-074

From: Dave Snellings <dsnellings@mail.doh.state.ar.us>
To: "Tom O'Brien" <tjo@nrc.gov>
Date: Fri, Nov 12, 1999 5:02 PM
Subject: Correction

Tom---A minor correction on the attachment. Please disregard the first e-mail. Thanks. DDS

CC: Bernie Bevill <bbevill@mail.doh.state.ar.us>, Jare...

11-12-99

SP-A-4
SP-AG-3

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RESPONSE TO QUESTIONS RELATING TO THE
RELEASE OF SOLID MATERIALS

1. **How were your State's radiological criteria derived and to what type of materials (e.g., medical pipe scale) do they apply? If Regulatory Guide 1.86 was used as a basis please indicate so if another technical basis was used, please provide that basis.**

The Arkansas Department of Health's experience base related to the release of solid materials (including soil) has been exclusively limited to Naturally Occurring Radioactive Materials (NORM). Yet, in this particular area, the Department has gained extensive experience.

The Department's NORM soil release limits are detailed in the Arkansas Rules and Regulations for Control of Sources of Ionizing Radiation (RH-6010.c.) Here, the Radium-226 or Radium-228 in soil averaged over any 100 square meters can not exceed background by more than 5 pCi/g, averaged over the first 15 cm of soil below the surface and 15 pCi/g averaged over 15 cm thick layers of soil more than 15 cm below the surface.

These particular release limits were developed by the Conference of Radiation Control Program Directors (CRCPD) Groups (i.e., Suggested State Regulations (SSR), Part N) and by other NORM Ad Hoc Working Groups. The bases for these particular levels apparently were derivations from the application of 10CFR Part 20 equivalent concentration limits for the unrestricted release of water containing either Radium 226 or Radium 228.

The Department's NORM equipment release limits are also described in the Arkansas Rules and Regulations for Control of Sources of Ionizing Radiation (RH-6010.b. and Appendix A entitled "Acceptable Surface Contamination Levels for NORM). These limits were also established in the CRCPD SSR process. It should be noted that the Department's next revision of its Rules and Regulations will reflect the current SSR Part N Appendix A equivalent. The limits established in the most current SSR Appendix are less stringent than currently in the Arkansas NORM regulations.

To date, the Department has not been required to determine acceptable release limits for radioactive material other than NORM. Any request for the unrestricted release of radioactive material other than NORM would be reviewed in light of applicable, current Nuclear Regulatory Commission (NRC) Guidance. These reviews would be performed on a case-by-case base. Reference will also be made to the Department's Exempt Concentrations in RH-902, Schedule C.

2. **How are your State's radiological criteria applied (e.g., through guidance, licensing actions, regulations)?**

The State's NORM criteria are clearly stated in our regulations. Yet, each NORM clean up is rigorously regulated through a specifically licensed process. Here, each potential clean up operation is outlined in a detailed work plan, which is reviewed closely by Division staff. Once the work plan has been reviewed verifying compliance with the Department's NORM Regulations, written approval is provided. During these clean up activities, the Department will observe segments of the clean-up activities (if not all).

3. **What surveying/monitoring methodologies are used? If NUREG/CR-5849 or MARSSIM are used, please indicate so. If a State developed or another method is used, please provide that method.**

In the NORM arena, specific licensees perform radiation dose level measurements employing calibrated micro-R meters. The Department will perform select confirmation surveys as deemed appropriate.

During NORM soil contamination clean ups, clean up standards are verified via approved radiochemistry methodology. In larger projects the specific licensee is required to submit a percentage (i.e., 10%) of their samples to an outside radiochemistry laboratory for independent analysis. The Department will also collect and analyze a select percentage of 'split' samples.

4: What type of instruments (e.g., manual versus automated, hand-held versus stationary, barrel counters versus conveyor systems) and what sensitivity (i.e., lower limit of detection) values are used as selection criteria for instruments used in demonstrating compliance with the radiological criteria provided in response to Question 1?

NORM fieldwork is performed using calibrated micro-R meters. Radiochemistry fieldwork is performed using appropriate and sensitive laboratory equipment, (i.e., GeLi Detectors). Here rigorous laboratory standardization is required and verified by the Department.

5: If your release criterion is zero, how do you have your licensees determine that a solid to be released is not radioactive or meets the zero criterion?

Not Applicable. In the real NORM world, the zero criteria is not often a viable option.

6: If any State licensees currently have volumetric release authorization, please identify the licensees and whether the quantities released are tracked, summarize the scope of these authorized activities, and provide the criteria used in granting the authorization.

Not Applicable.