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State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF HAZARDOUS WASTE MANAGEMENT

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Mr. David R. Smith  
Director of Environmental Services  
Shieldalloy Metallurgical Corporation  
P.O. Box 768  
Newfield, NJ 08344

24 SEP 1990

Dear Mr. Smith:

Re: Work Plan for the Radiological Characterization of the  
Shieldalloy Metallurgical Corporation Newfield Facility  
June 1990

The New Jersey Department of Environmental Protection (Department), the U.S. Environmental Protection Agency (EPA) and the U.S. Nuclear Regulatory Commission (NRC) have completed a review of the Work Plan for the Radiological Characterization of the Shieldalloy Metallurgical Corporation Newfield Facility (Radiological Characterization) and have significant comments. Since the Department has assumed the lead role in coordinating the Radiological Characterization with Shieldalloy Metallurgical Corporation (SMC), comments from all three agencies have been incorporated into this letter. The comments are described below as General Comments and Page-Specific Comments.

General Comments

1. The level of detail in the work plan is insufficient to adequately describe the characterization methodologies to be used or the criteria for identification of areas with elevated levels of activity. This issue is discussed further in the Page-Specific Comments.
2. The figures provided are unacceptable. A figure comparable to Figure 4 of the Remedial Investigation Work Plan is more appropriate. Figure 4 shows the locations of the various slag piles and is of sufficient scale to show proposed sampling points. Figure 4 does not, however, show the location of Hudson Branch which shall be included on the revised figures as discussed in the Page-Specific Comments, below.

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3. The Work Plan does not include details about the air monitoring program that will be conducted in compliance with the National Emissions Standards for Hazardous Air Pollutants (NESHAPS). This issue is also included in the page-specific comments, below.
4. The Work Plan does not include a schedule for completing the proposed activities. A schedule must accompany the Work Plan.
5. The work plan does not address the offsite radiological characterization of the ferrovanadium slag that was crushed onsite and transported offsite for use as concrete aggregate and road fill. As discussed in our telephone conference on June 12, 1990, SMC proposed to conduct a file review to determine where the slag was transported. This shall be included as part of the work plan. Offsite areas found to contain ferrovanadium slag shall be characterized using approved methodologies in a second phase of investigation.

Page-Specific Comments

6. Page 1-1, fourth paragraph:

The fourth paragraph states: "This characterization will be conducted under the authority of the existing U.S. NRC facility license SMB-743." SMC was informed on numerous occasions that both the Department and EPA have jurisdiction over radiological issues at the site, in addition to the NRC jurisdiction. SMC was also informed that the radiological characterization is part of the site wide remedial investigation (RI) to be conducted pursuant to the Administrative Consent Order dated October 5, 1988 (1988 ACO). This paragraph shall be modified to reflect this. The Department is allowing the radiological characterization to proceed on a separate schedule from the RI, however, the results shall be incorporated into and considered part of the RI.

7. Page 1-3, last paragraph:

As described above, the objective of the radiological characterization work plan is not to "identify" a program of work to radiologically characterize the facility and any adjacent land which may be contaminated with radioactive materials, but to describe in sufficient detail the procedures and methodologies by which characterization will be achieved and the criteria for identification of areas with elevated levels of activities. The objective is also to radiologically characterize offsite properties, in addition to adjacent properties.

8. Page 2-1, second paragraph:

The grid system shall cover the entire property owned by SMC, not only the area 30 meters beyond the existing facility fenceline as proposed. The proposed survey area consists of two grid systems which include the area extending 30 meters beyond the fenceline and the area extending 20 meters on each side of the stream (Hudson Branch). It is assumed that these two grid systems overlap, providing the required coverage, however, the scale and level of detail in Figures

1-1 and 2-2 is insufficient to make the appropriate comparisons. Therefore, a figure of sufficient scale shall be provided which accurately shows the location of the stream in relation to the fenceline and property boundaries, and the complete survey area.

Also, it is recommended that the grid system, or at a minimum several grid points, be surveyed by a licensed surveyor and semi-permanently marked so that it can be readily re-established at future dates.

9. Page 2-3, second and third paragraphs:

The locations of the six soil and two surface water/sediment background samples shall be provided.

10. Pages 2-4 and 2-5:

The correlation between counts per minute (cpm) and microroentgens per hour (uR/hr) may not be linear over the entire range. It is not unusual that the correlation curve flatten out at the high end for a sodium-iodide thallium [NaI(Tl)] detector. A non-linear correlation fit in this case would be acceptable.

In addition, separate correlations are needed for shielded and unshielded probes.

11. Page 2-6, top paragraph:

The term "anomalous measurement" is not defined. The work plan shall specify anomalous measurements, i.e., measurements that are above background, above screening levels or the highest in the grid block.

12. Page 2-6, first paragraph:

The use of the shielded probe is acceptable for the "walkover" survey near the stockpiles that contain elevated levels of activity, however, shielded probes will significantly reduce the count rate and decrease sensitivity. Therefore, longer scanning and measurement times will be required. This further supports the need for separate correlations for the shielded and unshielded probes.

13. Page 2-6, second paragraph:

It is proposed that 18 soil samples (six per pile) from areas outside the source material storage yard (SMSY) will be obtained over a depth of one foot and composited. This approach will not provide a depth profile of potential contamination. These samples shall be changed to borings and will proceed in the same manner as the other proposed borings. Discrete, not composited, samples shall be collected, analyzed and reported. Also, the locations of these borings shall be provided on a figure of sufficient scale and detail.

14. Page 2-7, first paragraph:

It is unclear if the twenty shallow borings identified in this area are restricted to areas covered by materials such as asphalt or concrete. This shall be clarified. Also, the locations of these borings shall be presented on a figure of appropriate scale and detail.

15. Page 2-7, fifth paragraph:

It is often difficult to control the depth and collect representative soil samples for desired intervals using a two man power auger as proposed. It is recommended that an alternate method be proposed in the event of unexpected difficulties.

16. Page 2-7, sixth paragraph:

Be aware that the correlation between downhole gamma logging measurements and the soil concentrations is complex because of the geometry of the borehole. Unless the radionuclide concentrations in the subsurface strata are homogenous, correlation between the soil and gamma measurements are poor. The difficulty with this correlation requires an increased dependence on soil sampling to verify the presence of contamination.

17. Page 2-8, second paragraph:

A total of 40 borings has been proposed in the unshielded (i.e., unpaved) areas. Additional borings may be warranted if these are not sufficient to characterize the extent of contamination for the feasibility study and potential remedial action.

18. Page 2-8, fourth paragraph:

It is unclear if "gross alpha activity" refers to total gross activity (mean plus 2 sigma error). This shall be clarified.

19. Page 2-9, first paragraph:

The compositing of soil samples from each borehole will not provide sufficient information to obtain a profile of the contamination. If samples are to be taken in six inch intervals, each of these shall be analyzed and reported separately to obtain the profile.

20. Page 2-9, third paragraph:

The ten samples to be collected from the ferrovanadium slag pile shall not be composited but analyzed and reported separately to obtain a range of concentrations. Results of samples collected by the Department have determined that the results from this slag vary considerably.

21. Page 2-9, fourth paragraph:

It is stated: "Air sampling will not be conducted under the characterization, but has been implemented by SMC in conjunction with the requirements established under the facility source material license." As discussed during the telephone conference on June 8, 1990, SMC advised the Department that air sampling would not commence as part of the radiological characterization, but instead in compliance with NESHAPS, since one-time monitoring would not provide "useful" data, and NESHAPS required long term monitoring. SMC was advised that this approach was acceptable, but that a detailed description of this scenario must be provided in the work plan since the work plan is a public document and considerable concern exists over airborne releases of radioactive material. SMC shall, therefore, expand the discussion of the air monitoring program and shall include, at a minimum, a discussion of the air sampling that "has been implemented", methodologies for sampling and analysis, schedule of sampling events, and other pertinent information. The results of the sampling and analysis completed at the time of the radiological characterization report is submitted shall be included in that document with an explanation that the project is ongoing.

22. Pages 3-1 through 3-3:

The discussion of the criteria for identification of areas with elevated levels of radioactivity is confusing. It should be noted that the criteria selected to identify the presence of radioactive contamination should reflect the Applicable or Relevant and Appropriate Requirements (ARARs) for the residual materials in areas designated for unrestricted use. Potential ARARs for the site include, but are not limited to, 1) Disposal or Onsite Storage of Thorium or Uranium Wastes From Past Operations, Option 1 of NRC's Branch Technical Position (46 FR 52061) and 2) Health and Environmental Standards for Uranium and Thorium Mill Tailings (40 CFR 192). Such references and appropriate applications shall be made in the work plan.

23. Page 4-1, fifth paragraph:

This paragraph references EPA sample identification and control, and chain of custody procedures. SMC shall also comply with any Department of Transportation (DOT) requirements which apply to radioactive sample transport. Also, the field sampling and decontamination protocols shall be identified.

24. Page 4-2, fourth paragraph:

The analytical laboratory does not necessarily need to be licensed by the NRC unless the quantity of radionuclides is above the limits specified in 10 CFR Part 30. More importantly, the lab must have the capability to perform the required analyses as per the NRC's Regulatory Guide 4.15: Quality Assurance for Radiological Monitoring Programs - Effluent Streams and the Environment, and approved EPA procedures. For EPA validated analytical methods for radionuclides

in aqueous samples, please refer to 51 FR 34835, Table 11. The work plan must include the names and qualifications of the laboratories that will be used during the Radiological Characterization.

25. Page 4-2, last paragraph:

HASL-300 is Department of Energy (DOE) methodology, not EPA, as stated.

26. Page 4-3, first paragraph:

The sensitivity of analytical methods must be low enough to demonstrate compliance with the regulatory limit for that particular media and use. For example, a of minimum detectable activity (MDA) of  $\leq 5\text{pCi/g}$  is not appropriate for demonstrating compliance with the regulatory limit for remedial actions of  $5\text{pCi/g}$  radium-226 in soil averaged over the first 15 cm of soil below the surface, 40 CFR 192.12.

A revised radiological characterization work plan shall be submitted to the same contacts at the Department, EPA and NRC within thirty (30) calendar days of receipt of this letter. The revised work plan shall address the comments described above.

Be reminded that failure to submit a revised work plan within the specified time frame shall be subject to stipulated penalties pursuant to paragraph 57 of the 1988 ACO.

If you have any questions, please contact me at (609) 633-1455.

Sincerely,

*Donna L Gaffigan*

Donna L. Gaffigan, Case Manager  
Bureau of Federal Case Management

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