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January 30, 2018

Mr. Doug Shoop, Manager
United States Department of Energy
Richland Operations Office
Post Office Box 550, MSIN: A5-14
Richland, Washington 99352

Re: Letter of Concern for Contamination Events Resulting from Plutonium Finishing Plant (PFP) Demolition Performed under Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Removal Action

Dear Mr. Shoop:

The purpose of this letter is to express our concerns regarding the spread of radioactive contamination released to the air and the environment during PFP demolition activities.

We have been taking air samples at various locations on the Hanford Site, as well as off the Hanford Site. While we have seen elevated results, there have been no off site levels indicating a threat to public health. However, we are concerned if work resumes without better controls, a risk to the public may develop. We have used information requests and recommendations to express our concerns throughout calendar year 2017. Given the recurring nature of these contamination events and the significance of the December 2017 release, we would like to formally state our concerns and request additional information.

**Issue 1: Protection of Public Health**

After the contamination events occurring in December 2017, cars with alpha contamination left the Hanford Site, potentially spreading contamination along the way to their destinations. Alpha traveling off the designated CERCLA site, as well as off the overall Hanford Site is concerning from a radiation protection standpoint as alpha particles are difficult to detect. From a dosimetry perspective, spread of alpha contamination is troubling because of its greater potential for damage (per unit of energy deposited) in biological tissue and the potential for lifelong internal contamination. Allowing alpha contamination off site is a serious and uncommon issue that we believe should be preventable through best management practices.

We have taken air samples at a public access point following the June 8, 2017, event. Elevated concentrations were detected for Americium 241 ($Am^{241}$) at 3.26 times above the National Emission Standards for Hazardous Air Pollutants (NESHAPs). (The NESHAPs value is a concentration that, if breathed for a year, would result in the 10 mrem ambient air standard.) We expected to see better controls after the June event and the communication of our results to your agency, as it was clear existing controls were not effective or sufficient. Given the repeated contamination events later in 2017, corrective actions were not adequate to prevent the continued spread of contamination.

Lastly, we are concerned about potential exposure to members of the public (service providers or tour participants) who were on site, or will be on site as work resumes.

**Issue 2: Protection of Environment**

We have seen elevated air samples, across the Hanford Site, showing the presence of Americium and Plutonium isotopes from PFP during active demolition. Additionally, other facilities' samples have shown potential deposition from PFP contaminants. The frequency of elevated ambient air samples we are seeing has trended upward. Once the contamination is allowed into the environment, it will migrate via air pathways, water, and through other biological vectors.

**Issue 3: Loss of Control of Boundaries and Off Site Spread**

A comparison of boundary maps from early in the PFP removal action to present shows that radiation contamination boundaries have moved drastically from the original commitments in the Removal Action Work Plan (RAWP). Loss of boundary control was even more significant based on the Tri-Party Agreement Change Notice (TPA-CN-0756, Figure 4-2 "Area of Contamination" map) which further reduced the allowed "Area of Contamination" on June 2017 and effectively revised the RAWP. Our recommendations have been for better controls to avoid boundary expansions.

It is our opinion that work at PFP should be performed in a manner so this loss of control does not occur. If work speed is increased with the intent of meeting a milestone, and doing so risks spreading contamination, we feel this should be discussed with lead agencies.

The RAWP calls out the entire 200 West Area as the CERCLA site. We have isotopically consistent samples (accounting for predicted spread for particle sizes) demonstrating spread beyond this area to US Ecology, Rattlesnake Barricade public access, as well as the contaminated cars that made it off the Hanford Site and into town. This would indicate that despite a generously large CERCLA site, a serious loss of control occurred. Case law (Docket No. RCRA-10-99-0106; *Determination Regarding CERCLA & RCRA Jurisdictional Relationship*) has determined the entire Hanford Site is not to be considered "on site" for CERCLA purposes. We will need to determine if further cleanup actions in areas outside the 200 West Area could then be subject to requirements of Washington Administrative Code (WAC) 246-247 and the Code of Federal Regulations (CFR) 40 CFR 61, Subpart H.

**Issue 4: Lack of Adherence to RAWP Air Monitoring Plan (AMP) Controls and Modeling**

The RAWP contains the Applicable or Relevant and Appropriate Requirements (ARARS) and the AMP, which are determined by Tri-Party members with input from us, as requested, and should be carried out as originally agreed.

Our November/December 2017 high volume and environmental air samples showed Plutonium/Americium concentrations elevated 5–10 times above NESHAPs limits. The ARARS call out the ambient air 10 mrem standard (40 CFR 61.92). If the NESHAPs levels are continually exceeded during the calendar year, it is possible the standard will be exceeded. Given that outside contractors, members of the public, and non-radiation workers are on site, we are concerned with these repeated exceedances.

We utilize our air samples to assess the effectiveness of the control technology in place and called out by the RAWP AMP. Our sample results demonstrated that the controls were not sufficient to properly reduce emissions. Controls called out in the AMP of the RAWP include wind speed work restrictions, misting, fixative, etc.

Given changes in the order of demolition as compared to the assumptions in the air modeling document (i.e., demolition and loadout of zones concurrently is not recommended, time of year demolition was to occur, and overall schedule), we recommend consulting with Dr. Napier from Pacific Northwest National Laboratory (PNNL) to reassess the need for additional modeling.

**Issue 5: Failure to Meet Removal Action Intent**

The stated reason for a removal action is to eliminate a health or environmental hazard. The definition of the removal action allows for the USDOE to have regulatory authority and reduces regulatory requirements. In this case, it seems risk has been created rather than avoided.

> Removal responses are common at Superfund Sites when the contamination poses an immediate threat to human health and the environment. Removals are classified as either emergency, time-critical, or non-time-critical depending on the extent and type of contamination. (EPA website)

We want to reiterate removal action should not disregard ALARA/ALARACT principles or use lead agency authority to the exclusion of those principles. This may include the need to use containment and/or confinement structures.

**Issue 6: Protection of Workers (via Article 32)**

Although our jurisdiction covers only public health, in this case we would like to express our support of Tri-Party agencies citing article XXXII, paragraph 106 of the Tri-Party Agreement (TPA). As the radiation protection authority for the state of Washington, we support pursuance of the Endangerment Clause. This invokes worker protection. We support this stop work on the

basis of our sample results, the high number of positive bioassays, delay in notifying us of elevated readings, and the practice of treating an outside Airborne Radioactivity Area (ARA) like an inside ARA.

**Washington State Department of Health Requests**

We would like to make the following requests on the basis of the requirements listed in the RAWP DOE/RL-2005-15 Section 4.3 Air Monitoring Plan. We would like to see data from November 1, 2017, through January 5, 2018, unless otherwise specified* (some of these items may have been included in other agencies' requests):

- Continuous Air Monitor (CAM) data to include readings, calibration dates, set points, detection limits, and round sheets (if available).
- Maps of boundary expansions from *June to current.
- The electron microscopy results analyzing particle size. If particle size is determined to be larger than the modeling assumption, please provide an explanation of how these larger nitrate particles are making it further away and not settling out via gravity closer in to CAMs and how this would impact the overall ratios of Americium and Plutonium.
- Plans indicating whether each modeled zone will be fully loaded out prior to demolition and load out of the next zone as advised in the modeling document.
- An estimate of the remainder of the radioactive source term in the Plutonium Reclamation Facility (PRF) rubble pile and the remainder of the building still standing.
- Any additional modeling performed after Dr. Napier's modeling document, PNNL-20113 Rev. 4 Addendum.
- Radiological smear survey data from cookie sheets.
- Ambient air data for N433, N554, N975, N165, N155, and N555 (isotopic data, if available).
- Current location and plans for disposal or reuse of exhausters/High Efficiency Particulate Air (HEPA) filters:
    - Include the date they were removed from service.
    - If they have been moved, we request the radiological surveys/analysis of the HEPA filters.
    - Date the vestibule was demolished and put in the rubble pile.
- Wind speeds during work times. (RAWP DOE/RL-2011-03 Section 4.3 Air Monitoring Plan limits to 20 mph, stated limit after prior contamination event was 15 mph).
- Regarding the use of foggers, were "lessons learned" from the prior contamination event utilized? If not, why?
- Criteria used for resuming work on December 15, 2017, after the stop work order was lifted.
- In addition to the non-radiation workers present during the December contamination event, were members of the public present?
- Log books, round sheets, or applicable work packages detailing:
    - Controls (i.e., water, fixative use, cover material).

  - Radiological surveys of equipment, tools, and materials verifying removable limits (>2,000dpm/100cm2 alpha or 100,000000dpm/100cm2 beta/gamma were handled according to the RAWP Section 4.3.1.2).
  - Stabilization methods used to address potential for airborne releases from "excessive crushing or size reduction."
- Additionally, we request the following (without requesting personally identifiable data; only requesting doses and locations):
  - All lapel monitor readings.
  - Bioassay results:
    - Dose, location, sample date, and result.
    - Dates employees were offered bioassays.
    - Any dose modeling done to account for delays from uptake to bioassay.
- In addition to the Hanford Site, lessons learned should be integrated from other USDOE sites, such as the Separations Process Research Unit (SPRU) Building H-2 Demolition. Lessons learned about contamination control can be found in the Type B Accident Investigation report for SPRU.
- We urge USDOE, as lead on removal actions, to use the lessons learned from these events to prevent similar losses of control in future projects where the margin of error is very slim (i.e., the upcoming demolition of the 324 Building) because of proximity to residents and agriculture. Risks to human health and the state's economy are of great concern to us.

We ask you to provide the requested data to us no later than March 9, 2018. If some items will take longer, please coordinate with us. If you have any questions, please contact John Martell by email at john.martell@doh.wa.gov, or Crystal Mathey at crystal.mathey@doh.wa.gov.

Sincerely,

Clark Halvorson
Assistant Secretary

cc: Shawna Berven, WDOH
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