

## **Hanford Advisory Board Draft Letter**

**Topic:** Comments to the Chronic Beryllium Disease Prevention Program Proposed Rule Changes

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**Version #1**

**Agency:** Office of Health, Safety and Security, Department of Energy

**Subject:** Chronic Beryllium Disease Prevention Program Rule Changes  
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Proposed Rules [Page 80734-80735]  
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The Hanford Advisory Board (Board) has become aware of the opportunity to comment on possible rules changes for the U.S. Department of Energy's plan for protecting the workforce at its various sites, and the public from exposure to beryllium.

Beryllium has been an important health and safety issue at the Hanford Site, which is currently implementing a corrective action plan to its existing Chronic Beryllium Disease Prevention Plan. The Board is aware that newly diagnosed cases of beryllium sensitivity are being added yearly to the existing list of individuals who have been exposed and sensitized to beryllium.

Due to the above information, the Board believes it to be within its responsibility to provide comment to the eleven questions posed in the Federal Register. Please find attached our comments which reflect the values of the Board on this important program.

Attachment: Hanford Advisory Board Comments to the Chronic Beryllium Disease Prevention Program Proposed Rule Changes

1. Should the U.S. Department of Energy (DOE) continue to use the Occupational Safety Health Administration (OSHA) permissible exposure level (PEL) for beryllium?

*Answer:* The DOE should establish as low as reasonably achievable exposure limits for beryllium in all its affected facilities, and avoid using the OSHA PEL. OSHA limits are politically established standards achieved via a negotiating process, and which fail to consider that exposure to beryllium at any level can trigger the autoimmune response which characterizes beryllium sensitivity. Beryllium sensitivity is the first stage of what may lead to Chronic Beryllium Disease in an exposed individual.

2. Should the DOE use the 2010 American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) of 0.05 [ $\mu\text{g}/\text{m}^3$ ] (8-hour time-weighted average of 0.05 microgram of beryllium, in inhalable particulate matter, per cubic meter of air), for its allowable exposure limit?

*Answer:* The DOE should establish its own limits that are as low as reasonably achievable. If it is possible to lower that limit to .02, as is the level employed at Hanford for sensitized workers, it should also be achievable for individuals who are not sensitized. It is known that in some cases, extremely low levels of exposure result in beryllium sensitization. It seems prudent, therefore, to set the lowest possible standard in order to avoid sensitization if such level is reasonably achievable. Workers should be afforded respirators and be required to wear them at any reasonable, detectable level. Furthermore, a "time weighted average" during which peaks of exposure are high, are not protective enough for individuals who are predisposed to be sensitized.

3. Should an airborne action level that is different from the 2010 ACGIH TLV for beryllium (8-hour time-weighted average of 0.05 microgram of beryllium, in inhalable particulate matter, per cubic meter of air) be established?

*Answer:* The DOE should establish lower limits than those now in effect in consideration of current knowledge; that more workers are being regularly sensitized at the Hanford Site, despite the use of current limits. (16 in the past year of which ten have had only Hanford work experience). This evidence should be enough to establish certainty that limits currently in place are not protective enough. The DOE should establish a rule that calls for effective personal protective equipment to be used by workers entering any facility that has been thoroughly characterized, found to contain beryllium at any level, and which has not been fixed in place, and therefore may possibly become airborne.

4. In order to achieve greater comparability of results across the DOE complex and in response to studies demonstrating that wet wipes capture more of the surface contamination than do dry wipes. Should the Department require the use of wet wipes?

*Answer:* The DOE should employ the method of sampling that will produce the most accurate and reliable results. Any method that is established for convenience sake, without consideration for thoroughness and accuracy should be abandoned. If wet wipes are more reliable, they should be used in all cases where wipe sampling is performed. We are concerned that current methods may allow contractors the ability to perform facility evaluations for beryllium that is more convenient rather than protective.

5. Since the use of wipe sampling is not a common OSHA requirement, how do current wipe sampling protocols aid exposure assessments and the protection of beryllium workers? How reliable and accurate are current sampling and analytical methods for beryllium wipe samples?

*Answer:* From existing evidence at the Hanford Site, it is apparent that current wipe sampling may not be sufficient, and may be leading to exposure assessments that are not protective enough. As noted in the answer to #3, there continues to be newly sensitized workers, 16 in the past year at Hanford, of which 10 are known to have been Hanford workers. For that reason alone, it should be considered possible that either current methods for sampling are inadequate, exposure limits are too high, or that both may be contributing to the phenomenon.

6. What is the best method for sampling and analyzing inhalable beryllium?

*Answer:* To our knowledge the current use of a pump type sampler with a suitable capturing media is the most practical and accurate method for establishing the presence of airborne beryllium. Wipe sampling, perhaps wet wipes, seems to be the best method for establishing the presence of surface bound beryllium that may become airborne. However, it may be possible to develop and manufacture a handheld device that can instantly detect and indicate the presence of beryllium, as there are such devices in use for the detection of other hazardous metals, such as lead. Members of the Hanford Advisory Board have identified a small company with the capability to perform development work on such a device. To date, the DOE has not provided a development grant for such work.

7. How should total fraction exposure data be compared to inhalable fraction exposure measurements?

*Answer:* This question assumes a definable difference between airborne beryllium and beryllium that is settled onto a surface, as in the OSHA definitions of nuisance dust in 29 CFR 1910.1000. As beryllium cannot be categorized as a simple nuisance, we challenge the assumptions that seem to be indicated by the question, as we understand it. Surface depositions of nuisance dust can become airborne, and therefore contribute to the airborne fraction upon the movement of air within the facility in question. However, there are far less dire consequences associated with such nuisance dust than with beryllium. All beryllium dust should be considered potentially airborne unless it is in a fixed state. This is especially true for old facilities whose interior spaces are affected by atmospheric disturbances of any magnitude, or even newer, contaminated facilities with active ventilation systems.

8. Should surface area action levels be established, or should DOE consider controlling the health risk of surface levels by establishing a low airborne action level that precludes beryllium settling out on surfaces, and administrative controls that prevent the buildup of beryllium on surfaces? If surface area action levels are established, what should be the DOE surface area action levels? If a low airborne action level should be established in lieu of the surface area action level, what should that airborne action level be? What, if any, additional administrative controls to prevent the buildup on surfaces should be established?

*Answer:* Yes, action levels should be established for surface and airborne beryllium and

should be as near zero as reasonably practicable. Any surface contamination not fixed in place by some method should be considered potentially airborne. Conversely, airborne beryllium may easily become surface contamination. We are uncertain as to how "administrative controls" can have any effect on airborne beryllium and prevent it from settling. Administrative controls should be used to prevent employees from entering a contaminated facility without the proper protective equipment and to track the work history to prevent repeated exposure of sensitized employees.

9. Should warning labels be required for the transfer, to either another DOE entity or to an entity to whom this rule does not apply, of items with surface areas that are free of removable surface levels of beryllium but which may contain surface contamination that is inaccessible or has been sealed with hard-to-remove substances, e.g., paint?

Answer: Yes, labels should be required before any transfer is allowed. It can be easily postulated that a contaminated surface, even one that is fixed, may be disturbed for a number of reasons. For instance, if the transferred item is a machine its new owner or user may decide it needs a new paint job, and sandblast or strip the surface to remove the old paint which would potentially release the fixed beryllium thus spreading contamination. If the contamination is in hard to sample or clean areas, those may become exposed if and when the machine is disassembled for repairs.

10. Should the Department establish both surface level and aggressive air sampling criteria (modeled after the U.S. Environmental Protection Agency's aggressive air sampling criteria to clear an area after asbestos abatement) for releasing areas in a facility, or should the Department consider establishing only the aggressive air sampling criteria?

Answer: Yes, the DOE should establish very aggressive air and surface sampling criteria for the release of a facility that has been contaminated with beryllium. Modeling on the Environmental Protection Agency's method may be practical if levels are established that are truly protective. The DOE should take into consideration that for some individuals, nearly any exposure to beryllium can be dangerous. Comparing to asbestos may lead to conclusions that are not useful for beryllium, considering that asbestos illnesses are affected by factors such as particle size, particle aspect ratio, whether or not an individual is a smoker, and other lifestyle factors. Conversely, there is evidence that smoking may reduce the tendency to become sensitized to beryllium in certain individuals. *(Clinical Environmental Health and Toxic Exposures, John Burke Sullivan and Gary R. Krieger, page 920)*

11. Currently, after the site occupational medicine director has determined that a beryllium worker should be medically removed from exposure to beryllium, the worker must consent to the removal. Should the Department continue to require the worker's consent for medical removal, or require mandatory medical removal?

Answer: If the DOE is truly concerned about the health and welfare of employees at its sites, mandatory removal should be implemented, complex-wide. It is known that employees are often concerned and reluctant over medical removal from a facility that is surely contributing to their ill health if they believe they will suffer professionally or economically. It is the DOE's responsibility to protect its workforce and we believe it is incumbent on DOE to

ensure fair and equitable treatment. An extreme effort should be vigorously expended to avoid economic loss to the affected worker by reassigning to a comparable position.