

DOCKET: 40-3392

LICENSEE: Honeywell International, Inc.
Metropolis, IL

SUBJECT: SAFETY EVALUATION REPORT FOR REQUEST TO TRANSFER MATERIALS UNDER TITLE 10 OF THE *CODE OF FEDERAL REGULATIONS* 40.13, "UNIMPORTANT QUANTITIES OF SOURCE MATERIAL" (TAC NO. L32787)

1.0 BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) regulates Honeywell Specialty Materials Metropolis Works (MTW) facility in Metropolis, Illinois, under Materials License SUB-526. The primary activity of Honeywell MTW is the conversion of uranium ore concentrates (yellowcake or U_3O_8) to uranium hexafluoride (UF_6). The UF_6 product is used as feed material for uranium enrichment plants. The U.S. Atomic Energy Commission first authorized operations at the site on December 17, 1958. The license was last renewed for a 10-year term, expiring May 11, 2017.

Honeywell previously requested and received approval from the NRC for disposal of scrap materials under Title 10 of The *Code of Federal Regulations* (10 CFR) 40.13, "Unimportant Quantities of Source Material." The most recent approvals, dated February 2, 2010 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML100220407), and April 25, 2011 (ADAMS Accession Number ML111040452), allowed two separate shipments of 2,550 cubic meters (m^3) (i.e., 90,000 cubic feet [ft^3]) of scrap materials to be sent to the US Ecology Idaho's (USEI) Resource Conservation and Recovery Act (RCRA) Subtitle C facility located near Grand View, Idaho.

2.0 PROPOSED ACTION

By letter dated July 30, 2012 (ADAMS Accession Number ML12220A011), Honeywell MTW notified the NRC of its intention to transfer unimportant quantities of source material to the USEI RCRA Subtitle C facility located near Grand View, Idaho, for disposal. Although this request is for the same volume of material as was previously approved for the two shipments mentioned above, the contents of this waste shipment differ from the previous shipments. The previous shipments consisted of scrap materials (e.g., crushed metal shipping containers) while the waste stream considered for this shipment includes paper, plastic, glass, soil, and soil-like materials.

3.0 REGULATORY REQUIREMENTS

According to 10 CFR 40.13(a), persons are exempt from the regulations if source material is by weight less than 0.05 percent of the mixture, compound, solution, or alloy. In this case a 0.05 percent by weight limit for natural uranium is equivalent to 12.5 becquerels per gram (Bq/g) (i.e., 338.5 pico-curie per gram [pCi/g]). A review is necessitated to ensure that this transfer does not pose a concern to public health and safety. According to Commission policy [*Federal Register*:

August 28, 2002 (Volume 67, Number 167), Proposed Rules, Page 55175-55179], the NRC will review potential use and disposition scenarios on a case-by-case basis to ensure that exposure limits in 10 CFR Part 20 are not exceeded.

It is important to note that 10 CFR 20.1402 dictates that, upon completion of decommissioning of a site in the future, doses to the public are not to exceed 0.25 milli-sieverts per year (mSv/yr) (i.e., 25 milli-rem per year [mrem/year]). However, the USEI permit requires that it demonstrate that no person will receive a dose exceeding 0.15 mSv (15 mrem) for 1000 years after closure of the facility.

4.0 STAFF EVALUATION

The NRC staff reviewed the submittal and the safety evaluation reports for the two previous shipments approved for transfer to USEI. Except for differences in the density of the two waste streams the NRC staff determined that the assumptions and information provided in this new request were identical to the information evaluated for the previous two requests.

4.1 SUMMARY OF EVALUATIONS FOR TWO PREVIOUS SHIPMENTS

The NRC staff has previously approved two separate shipments of 2,550 m³ (90,000 ft³) of scrap materials for disposal at USEI. As discussed in the Safety Evaluation Reports for the previous shipments, multiple scenarios were evaluated to assess the risk of the waste material to workers and members of the public. The limiting scenario for workers at the facility was determined to be an industrial scrap disposal scenario, which considers exposures associated with the inspection of the waste upon arrival at USEI, transporting the material to the disposal cells, and disposing of the materials. NRC staff used the tables provided in Appendix F of NUREG-1640, Volume 3, for the industrial scrap disposal scenario to calculate a mean dose of 0.0041 mSv/yr (0.41 mrem/yr). Further evaluation of the dose indicated that the maximum projected annual dose associated with the groundwater pathway, 7.6×10^{-23} mSv (7.6×10^{-21} mrem), would occur after 1000 years.

NRC staff also considered an inadvertent intruder scenario, which assumes that an individual constructs a house with a basement on the site and resides there. The dose calculated for this scenario is 0.0731 mSv/yr (7.31 mrem/yr).

The SER associated with the April 25, 2011 approval also considered the cumulative impacts associated with successive years of disposal of the same material. Based on current USEI disposal practices NRC staff found that the only potential impact is from the groundwater pathway. However, since the dose associated with a worker on the site, which considered the groundwater pathway, is so small the cumulative impacts will not be an issue. Therefore disposals of this scrap material could continue for an indefinite period of time without having a significant impact on the post-closure dose.

4.2 PROPOSED DISPOSAL OF A NEW WASTE STREAM

Honeywell is requesting approval for the disposal of a new waste stream at USEI. Although the request is for the same volume of material as was previously approved this waste stream includes paper, plastic, glass, soil, and soil-like materials instead of the scrap material previously approved. Although Honeywell anticipates shipping the same volume of material the density of the new waste stream is approximately one-third the density of the scrap material

previously approved. Honeywell has also asked the NRC staff, as part of its review, to consider that this transfer will occur annually for a period of ten years (2012 through 2021).

NRC staff used the same industrial scrap disposal scenario and inadvertent intruder scenario used to evaluate the doses associated with scrap material to calculate the doses associated with this new waste stream. The only parameter that was modified was the "Density of contaminated zone," which was changed from 1.5 g/cm³ to 0.46 g/cm³ to account for the lower density associated with the new waste stream. While the dose associated with the industrial scrap disposal scenario, based on the tables provided in NUREG-1640, Appendix 3, remains the same for this new waste stream (0.0041 mSv/yr [0.41 mrem/yr]) the lower density of the new waste stream yields a lower dose (7.2×10^{-23} mSv/yr [7.2×10^{-21} mrem/yr]) associated with the groundwater pathway. Doses calculated for the inadvertent intruder scenario also decreased to 0.0453 mSv/yr (4.53 mrem/yr) due to the lower density waste stream.

NRC staff also considered the cumulative impacts associated with disposal of this waste stream over successive years. As mentioned previously, based on current USEI disposal practices and the low doses associated with the two exposure scenarios, disposal of this material over the next 10 years can continue without having a significant impact on the dose to the workers or to an inadvertent intruder that may be exposed following closure of the site.

5.0 FINDINGS

Based on the analyses summarized herein, the NRC staff finds the transfer of 2,550 m³ of new source material per year for a period of ten years to USEI is in accordance with 10 CFR 40.13, "Unimportant Quantities of Source Material," provided that the source material has been determined to meet the definition of unimportant quantities. NRC staff also finds the transfer acceptable in accordance with current Commission policy related to the exposure limits defined in 10 CFR Part 20.

6.0 PRINCIPAL CONTRIBUTOR

Adam Schwartzman, Technical Reviewer, FSME/DWMEP