[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[Docket No. 40-3392; NRC-2012-0111]

Honeywell Metropolis Works

Grant of Exemption for Honeywell Metropolis Works License

AGENCY: Nuclear Regulatory Commission.

ACTION: Environmental assessment and finding of no significant impact.

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SUPPLEMENTARY INFORMATION:

I. Introduction

The U.S. Nuclear Regulatory Commission's (NRC's) staff received a request from Honeywell Metropolis Works (Honeywell) dated October 5, 2011 (Ref. 1); revised March 6, 2012 (Ref. 2), and April 12, 2012 (Ref. 10), for an amendment to its license, Materials License SUB-526, to exempt Honeywell from the values of the Inhalation Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) that appear in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, Appendix B, Table 1. Implementation of the adjusted DAC and ALI values

would exempt Honeywell from sections of 10 CFR Parts 20 and 40 that refer to DAC and ALI quantities in Appendix B to Part 20, including values used in considering notifications of incidents made according to 10 CFR 20.2202(a)(2), and 10 CFR 20.2202(b)(2) and reporting requirements in 10 CFR 40.60(b)(1)(ii)—as well as other affected actions. Honeywell also requests exemption to the Organ Dose Weighting Factors listed in 10 CFR 20.1003. The exemptions would authorize Honeywell to use the International Commission on Radiation Protection (ICRP) Publication 68, "Dose Coefficients for Intakes of Radionuclides by Workers," (ICRP 68) for DAC and ALI determinations (Ref. 4). Consistent with the ICRP 68 methodology, Honeywell also requested authorization to utilize the tissue weighting factors in ICRP Publication 60, "Recommendations of the International Commission on Radiation Protection, Publication 60" (Ref. 5). As documented in a letter dated March 6, 2012 (Ref. 2), the October 5, 2011, exemption request replaced and withdrew an earlier request dated July 26, 2011. As documented in an e-mail dated April 12, 2012 (Ref. 3), Honeywell changed the exemption request to delete the phrase "as well as other affected actions." An Environmental Assessment (EA) was performed by the NRC staff as part of its review of Honeywell's exemption request, in accordance with the requirements of 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions. The conclusion of the EA is a Finding of No Significant Impact (FONSI) for the proposed licensing action.

II. Environmental Assessment

Background

Honeywell Metropolis Works is authorized under Materials License SUB-526 (Ref. 6), issued pursuant to 10 CFR Part 40, Domestic Licensing of Source Material, to possess natural uranium materials for the conversion of refined uranium ore into uranium hexafluoride suitable for enrichment. No uranium enrichment is performed at the Honeywell plant.

Principal activities include receipt and storage of uranium oxide (U_3O_8) and chemical conversion of the U_3O_8 into uranium hexafluoride.

Inhalation of dust in radiologically controlled areas at the Honeywell plant poses an internal radiation hazard, and the NRC regulations in Part 20, Subpart C, and Honeywell's current license requires Honeywell to implement certain protective measures to minimize that hazard. These measures include taking a variety of air samples, using respirators in certain work areas, posting airborne radioactivity warning signs outside the work areas, and putting the potentially exposed workers on a routine bioassay program to assess their intakes and verify the effectiveness of the protection program. Many of these protective measures are triggered when the air concentrations in the workplace reach specified levels of the air concentrations identified in 10 CFR Part 20, Appendix B.

Honeywell seeks to amend SUB-526 to reflect exemptions to permit Honeywell to use values other than those tabulated in 10 CFR Part 20, as the basis for triggering Honeywell's exemption request is the recommendations in ICRP 68. In the supplemental license amendment application (Ref. 1), Honeywell stated that the assessment of the radiological hazard based on 10 CFR Part 20, Appendix B, requires it to implement monitoring and protection programs at levels that are out of proportion with the true level of hazard, and that do not significantly add to worker protection. Honeywell stated that granting the exemption would enable it to reduce the size of its internal exposure program while, at the same time, provide a level of protection proportional to the actual hazard. Honeywell referenced the NRC's Staff Requirements Memoranda (SRM-SECY-99-077 and SRM-SECY-01-0148, Refs. 7 and 8), which directs the NRC staff to grant exemptions to Part 20 on this modeling issue on a case-by-case basis.

Review Scope

In accordance with 10 CFR Part 51, this EA serves to: (1) present information and analysis of the license amendment request, (2) explain the basis for issuing a FONSI and the decision not to prepare an Environmental Impact Statement (EIS), and (3) fulfill the NRC's compliance with the National Environmental Policy Act when no EIS is necessary.

This document is limited to evaluating and documenting the impacts of the proposed exemption from specified sections of Parts 20 and 40 and the license amendment. Other activities on the site have previously been evaluated and documented in the June 30, 2006, EA for the Renewal of the NRC license for Honeywell (2006 EA) (Ref. 9). The 2006 EA is referenced when it has been determined that no significant changes have occurred. Except as otherwise provided herein in response to the exemption request, approved operations will continue to remain limited to those authorized by Honeywell's Source Material License SUB-526.

Proposed Action

The proposed action would grant Honeywell an exemption from a portion of the requirements in 10 CFR Part 20, Appendix B; and 10 CFR 20.1003, which requires that Honeywell use specific DAC and ALI values as tabulated in Appendix B—and the Organ Dose Weighting Factors listed in 10 CFR 20.1003 for dose assessments—and the reporting requirements in 10 CFR 40.60(b)(1)(ii). The amendment for exemption would allow Honeywell to use the DAC and ALI values listed in the ICRP, "Dose Coefficients for Intakes of Radionuclides by Workers," Publication 68, Annals of the ICRP, Volume 24, No. 4, 1994 (ICRP 68, Ref. 4) and the Tissue Weighting Factors listed in ICRP Publication 60, "1990

Recommendations of the International Commission on Radiation Protection, Publication 60" (Ref. 5).

The proposed exemptions change the methodology by which the licensee assesses the internal dose received by its workers and staff in order to use an improved method that is recommended by the international scientific community (Refs. 4 and 5). These exemptions do not change the NRC dose limits to which the licensee must maintain and report for its workers and/or members of the public.

Need for the Proposed Action

The use of ICRP Publication 68-based methodologies will facilitate Honeywell's as low as is reasonably achievable (ALARA) practices and Bioassay Program's progress. The Commission has determined that using newer models to calculate internal doses for those individuals occupationally monitored by the licensee will provide a more accurate and precise assessment of the dose of the internal organs of the workers. Since protective measures are based on hazard, which is proportional to dose, the NRC staff has determined that Honeywell would be able to refocus ALARA practices, particularly internal exposure control and protection, to concentrate on protection based on the actual hazard.

The proposed action does not exempt Honeywell from the requirement to control occupational doses to the limits specified in 10 CFR Part 20, Subpart C and public doses to the limits specified in 10 CFR Part 20, Subpart D. It only changes the methods by which the occupational and public doses are calculated.

Affected Environment

The affected environment for the proposed activity is the Honeywell Metropolis Works site. A full description of the site and its characteristics is given in the 2006 EA. There have been no significant changes to the environment since the 2006 EA.

Effluent Releases and Monitoring

A full description of the effluent monitoring program at the site is provided in the application for renewal of SUB-526 and in the 2006 EA. Monitoring programs at the Honeywell facility comprise effluent monitoring of air and water and environmental monitoring of various media (air, soil, vegetation, and groundwater). This program provides a basis for evaluation of public health and safety impacts, for establishing compliance with environmental regulations, and for development of mitigation measures if necessary. Based on its review of the 2006 application for renewal, the NRC staff concluded that the environmental monitoring program was acceptable. The basis for concluding that the environmental monitoring program was acceptable is documented in the 2006 EA. There have been no changes to the environmental monitoring program since the license renewal, and the proposed action will not change the monitoring program.

Environmental Impacts of Proposed Action

Radiological Impacts

The basic limits on radiation exposures, as well as the minimum radiation protection practices required of any NRC licensee, are specified in 10 CFR Part 20. Part 20 underwent a major revision in the 1980s, and the final rule was published in the *Federal Register* on May 21, 1991, (56 FR 23391) and became mandatory for all licensees in January 1994.

One of the major changes incorporated in the revised Part 20 was the manner in which internal exposure to radioactive materials is regulated. Before the revision, NRC regulated

internal exposures by limiting the amounts of radioactive materials that may be taken into the body over specified time periods. The revised Part 20 eliminated regulation based on intakes and, instead, now regulates on the basis of the dose that resulted from those intakes. The internal dose from intake of radioactive material is referred to in Part 20 as the "committed effective dose equivalent (CEDE)." The change to regulation of dose instead of intake was prompted, in part, by similar changes in the recommendations provided by national and international bodies, and also by the desire to end the traditional treatment of internal and external doses as two distinct and separate entities. One consequence of the dose-based rule is that compliance would not necessarily be constrained by use of a specific set of parameters to calculate the dose.

Part 20 allows certain adjustments to be made to the model parameters if specific information is available, such as adjustments when the particle size of airborne radioactive material is known, rather than using a default particle size. However, Part 20 also specifies certain protection requirements in terms of the quantities tabulated in Appendix B, the ALI, and the DAC; rather than in terms of dose. Thus, requirements such as posting of airborne radioactivity areas, monitoring for intakes of radioactive materials, establishment of bioassay programs, and use of respirators remain explicitly tied to the measurable quantities rather than to a dose. This approach was taken to assure that these criteria would be easy to implement, and not impose an undue calculation burden on a licensee.

The models used in Part 20 to regulate internal dose are those described in ICRP Publications 26 and 30; adopted by ICRP in 1977 and 1978, respectively (Refs. 10 and 11). Much of the basic structure of these models was developed in 1966, although some of its components and parameters were altered somewhat between 1966 and their formal adoption by ICRP in 1978. In the same year that the Commission approved the final Part 20 rule, ICRP published a major revision of its radiation protection recommendations (ICRP 60, Ref. 5). In the

several years following this revision, ICRP published a series of reports in which it described the components of an extensively updated and revised internal dosimetry model.

These reports include ICRP Publications 60 (1990), 66 (1993), 67 (1993), 68 (1994), 71 (1995), 72 (1995), and 78 (1997). The NRC licensees are not permitted to use the revised and updated internal dosimetry models unless an exemption to 10 CFR Part 20 is granted.

Although the dose per unit intake, calculated using the new models, does not differ by more than a factor of about two from the values in Part 20 for most radionuclides, the differences are substantial for some; particularly for the isotopes of thorium, uranium, and some of the transuranic radionuclides. For example, for inhalation of insoluble thorium-232 (^{232}Th), the CEDE per unit intake calculated using the revised ICRP lung model is a factor of about 15 times lower than that in Part 20. Because protective measures are based on hazard, and since hazard is proportional to dose, Part 20 requires significantly more protective measures when using ^{232}Th than would be warranted based on the revised models. Honeywell requested that it be allowed to use DAC and ALI values based on the dose coefficients listed in ICRP 68 and the tissue weighting factors listed in ICRP 60.

The exemption, if approved and documented in a license amendment, will authorize the use of methodologies based on ICRP Publication 68. ICRP Publication 68-based dose coefficients would be used to assign the effective dose to workers. The use of these advanced methodologies requires adoption of adjusted DAC and ALI values in place of those specified in 10 CFR Part 20, Appendix B. Accordingly, implementation of adjusted DAC and ALI values will exempt Honeywell from the requirement to use the organ and tissue weighting factors in the definition of weighting factor in 10 CFR 20.1003, and from the requirements to use ALI and DAC values in Table 1 of Appendix B.

Acceptance of the newer models and methods of the effective dose assessments involves the use of the values of the ICRP 60 Tissue Weighting Factors in place of the 10 CFR 20.1003 Organ Dose Weighting Factors. Therefore, Honeywell also requested an exemption that would authorize it to use the values for the Tissue Weighting Factors stated in Table S-2 of ICRP 60 in place of using the Organ Dose Weighting Factors listed in 10 CFR 20.1003. If the request is approved, the exemptions to 10 CFR Part 20, Appendix B, the Organ Dose Weighting Factors values listed in 10 CFR 20.1003, and the reporting requirements in 10 CFR 40.60(b)(1)(ii) will be documented in SUB-526 as new license conditions.

Honeywell stated that it will further advance its ALARA practices and Bioassay Program by using the newer models and methods. As the Commission stated in SECY-99-077, "... the newer models provide more accurate dose estimates than the models used in Part 20," and "the differences are substantial for ... thorium, uranium, and some transuranic radionuclides." Honeywell stated that use of ICRP 68-based methodologies would facilitate its ALARA practices and bioassay programs. The NRC staff finds that use of the newer models and methods would enable Honeywell to perform more accurate and realistic internal dose assessments. The NRC staff concludes that because protective measures are based on the hazard which is proportional to dose, Honeywell would be able to refocus ALARA practices—particularly internal exposure control and protection—to concentrate on protection based on the actual hazard.

In the 2006 EA, (Ref. 9) the NRC staff evaluated the environmental impacts of the methods used at the Honeywell plant to control emissions, including liquid effluent treatment and air effluent dust collectors and scrubbers. This report found that these methods resulted in insignificant radiological impacts of normal operations and potential accidents, and were consistent with NRC's regulations. The methods that were evaluated and found to be

consistent with NRC's regulations in the 2006 EA are the same methods that are now in use by Honeywell to control emissions.

The NRC staff has determined that granting the exemption will not affect the radiological impacts of plant operation evaluated in the previous EA because changes in the dose calculation methodology will not affect the methods Honeywell uses to control emissions, and which the NRC staff previously determined in the 2006 EA were consistent with NRC's regulations.

In so much as granting the exemptions will not affect the methods Honeywell uses to control emissions, and those methods have been found to be consistent with NRC's regulations, granting the exemption will have no additional impact on the licensee's compliance with NRC's regulations and guidance.

Non-radiological Impacts

The NRC staff has determined that there are no non-radiological impacts associated with the proposed action because there are no changes in facility operations associated with the proposed action that would change the non-radiological impacts evaluated and found acceptable in the 2006 EA.

Cumulative Impacts

The NRC staff has determined that there are no cumulative impacts associated with the proposed action because no changes in facility operations will result from granting the exemption. Therefore, granting the exemption will not increase the cumulative impacts evaluated and found acceptable in the 2006 EA.

Alternatives to the Proposed Action

The NRC considered an alternative to the proposed action, which was to deny the amendment request. The NRC staff rejected this alternative because the health and safety of the workers, the public, and the environment would not be adversely affected by the requested action. In addition, the licensee will be able to save time and resources on implementing protective measures upon approval of the proposed action. The new models will maintain doses within the regulated limits, while allowing the licensee to remove unwarranted protective measures required by the old models.

Agencies and Persons Contacted

The NRC contacted Gary McCandless, Chief, Bureau of Environmental Safety, Division of Nuclear Safety, Illinois Emergency Management Agency (IEMA), concerning this request. IEMA had no comments or objections to the EA/FONSI and proposed license amendment.

Because the proposed action is entirely within existing facilities, and does not involve new or increased effluents or accident scenarios, the NRC has concluded that there is no potential to affect endangered species or historic resources. Therefore, consultation with the State Historic Preservation Society and the U.S. Fish and Wildlife Service was not performed.

III. Finding of No Significant Impact

Based upon the EA, the NRC staff concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the staff has determined that preparation of an EIS is not required.

IV. References

The following documents are related to the proposed action:

1. Larry A. Smith, Honeywell Metropolis Works, Letter to the NRC, “Supplemental Documentation for Request to Use ICRP 68 for DAC, ALI, and Soluble Uranium Limit,” October 5, 2011 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML11286A228).
2. Larry A. Smith, Honeywell Metropolis Works, Letter to the NRC, “Withdrawal of Honeywell International, Inc., Request to Use ICRP 68 for DAC, ALI, and Soluble Uranium, dated July 26, 2011,” March 6, 2012 (ADAMS Accession No. ML12073A180).
3. E-mail from R. Stokes, Honeywell, to J. Sulima, NRC April 12, 2012, ADAMS Accession No. ML12117A355.
4. ICRP, “Dose Coefficients for Intakes of Radionuclides by Workers,” Publication 68, Annals of the ICRP, Volume 24, No. 4, 1994.
5. ICRP, “1990 Recommendations of the International Commission on Radiation Protection,” Publication 60, Annals of the ICRP, Volume 21, No. 1-3, 1991.
6. Material License SUB-0526, for Honeywell, International, Inc., February 28, 2011, ADAMS Accession Nos. ML110530154 and ML110530158.
7. SRM-SECY-99-077, Staff Requirements Memoranda, SECY-99-077, to Request Commission Approval to Grant Exemptions from Portions of 10 CFR Part 20, April 1999.
8. SRM-SECY-01-0148, Staff Requirements Memoranda, SECY-01-0148, Processes for Revision of 10 CFR Part 20 Regarding Adoption of ICRP Recommendations on Occupational Dose Limits and Dosimetric Models and Parameters, April 2002.
9. Environmental Assessment for Renewal of NRC License SUB-526 for the Honeywell Specialty Materials Metropolis Work Facility, June 30, 2006, ADAMS Accession Number ML061780260. *Federal Register* Notice of Availability of EA and FONSI – 71 FR 45862, August 10, 2006.

10. ICRP, " Recommendations of the International Commission on Radiological Protection," Publication 26, 1977.

11. ICRP, "Limits for the Intake of Radionuclides by Workers," Publication 30, 1978.

These references may be examined and/or copied for a fee at the NRC's Public Document Room, located at One White Flint North, 11555 Rockville Pike, Rockville, MD 20852. The references with ADAMS accession numbers may also be viewed in the NRC's Library at *http://www.nrc.gov/reading-rm/adams.html*.

Questions with respect to this action should be referred to Ms. Mary Adams, Conversion, Deconversion and Enrichment Branch, Division of Fuel Cycle Safety and Safeguards, U.S. Nuclear Regulatory Commission, Mail Stop E-2-C40M, Washington, DC 20555-0001, Telephone: 301-492-3113.

Dated at Rockville, Maryland this 10 day of May 2012.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION.

/RA/

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