

Honeywell Chemicals
2768 North US 45 Road
Metropolis, IL 62960

40-3392

October 21, 2005

(UPS: 301-415-6334)

Mr. Michael G. Raddatz, Sr. Project Manager
U.S. Nuclear Regulatory Commission
Uranium Processing Section Div. of Fuel Cycle Safety & Safeguards
Fuel Cycle Facilities Branch, Mail Stop T-8A33
Office of Nuclear Material Safety and Safeguards
Two White Flint North, 11545 Rockville Pike
Rockville, MD 20852-2738

Dear Mr. Raddatz:

On May 27, 2005 Honeywell Metropolis Works submitted to the USNRC an application for renewal of USNRC Source Materials License SUB-526, including a Safety Demonstration Report, Environmental Report, and updated Emergency Response Plan. On September 22, 2005 the USNRC provided to Honeywell a list of Requests for Additional Information (RAIs) on the submitted materials. Having reviewed the submitted materials and RAIs, and the pertinent regulations and guidance documents, we are pleased to submit the enclosed responses to the USNRC's RAIs. In addition, we have identified one additional issue, related to the site's Respiratory Protection Program that may require revision of the submitted License Renewal Application to ensure the program's consistency with current USNRC guidance. The enclosed materials address this issue and our proposed changes.

As we approach completion of the USNRC's review of our license renewal application, we recognize that some changes in site programs and practices will be needed to ensure compliance with the conditions established in the new license. Therefore, we are requesting a 90 day implementation period following the USNRC's approval of our license renewal application. During this period we will make a controlled transition from compliance with the current license to the new license.

We hope that you find the enclosed materials to be complete and that our responses are helpful in furthering your review of Honeywell's license renewal application. If you should have any questions, please contact Mr. Darren Mays, Metropolis Works Health, Safety, and Environmental Manager, at (618) 524-6396.

Sincerely,



David B. Edwards
Plant Manager

Attachment A: RCRA Groundwater Work plan approval letter

cc: D. Mays
J. Tortorelli

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Honeywell Metropolis Works Responses to RAIs

RAI ER 1.1-1:

ER Section 1.1 provides a list of five "upgrades and modifications" that have been implemented since the last license renewal in May 1995. This list is significantly different than the list of changes to the facility that is presented on pages 1-1 and 1-2 of the Safety Demonstration Report (SDR). A list of completed upgrades and modifications will be incorporated in the EA; however, the reviewer is unable to determine the basis for the two lists. To aid the NRC staff in the development of an independent analysis of the environmental effects associated with the proposed license renewal, the licensee is requested, in accordance with 10 CFR 51.41, to provide the criteria used to develop these two lists, and explain the significance of the differences between the lists.

Response:

No specific criteria, such as total cost or extent of modification required, were used to develop the lists. The lists were developed based on discussions with personnel having a broad knowledge of site history and operations. The lists were developed by two different groups working on the Environmental Report and Safety Demonstration Report independently; both lists are accurate.

RAI ER 2.1.2.1-1:

An apparent inconsistency exists between the Honeywell Metropolis Works (MTW) facility's production capacity and source material quantities in the Environmental Assessment (EA) for the last license renewal and the current license renewal ER. The 1995 EA states that the design capacity of the plant is 12,700 metric tons of UF₆ per year (14,000 tons per year). The 1995 EA also states, "Approximately 650 feed ore shipments are received each year and approximately 30,000 metric tons (33,000 tons) of ore are stored onsite." (Reference is made to AlliedSignal's RAI responses dated September 6, 1994, and November 16, 1994).

Section 1.0 of the current license renewal ER states that capacity was increased to 12,700 metric tons in 1995 and approximately 14,000 metric tons in 2001. On Page 10 of the ER, under the *Feed Storage, Sampling, and Preparation* heading, it states that approximately 650 feed ore shipments are received each year and approximately 30,000 metric tons (33,000 tons) of ore are stored onsite. It is unclear how the plant capacity, and presumably, the actual production rate, can increase by greater than 10 percent (from 12,700 metric tons to 14,000 metric tons) without a corresponding increase in source material, a decrease in on-site storage, or both.

To satisfy the NRC's requirements for completeness and accuracy of information provided to the Commission (10 CFR 40.9) and to resolve this apparent inconsistency, the licensee is requested to confirm the following information:

- a. Design capacity in metric tons and tons of UF₆;
 - b. Quantity of UF₆ produced in each of the past 5 years;
 - c. Approximate number of feed ore shipments received for each of the past 5 years;
- and

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- d. Approximate quantity of ore currently stored onsite.

Response:

- a. The current design capacity of the facility is 14,000 metric tons or 15,400 tons per year.
- b. The quantity of UF6 produced in each of the last five years is as follows:

Year	UF6 Production (metric tons)
2000	8943
2001	9320
2002	9469
2003	7072
2004	6118

- c. The number of feed ore shipments received in each of the past five years is as follows:

Year	Number of Shipments
2000	535
2001	582
2002	476
2003	604
2004	631

- d. The approximate quantity of ore stored onsite (September 2005) is 33 million pounds.

RAI ER 2.1.2.1-2:

Table 2.1, "Maximum storage quantity for industrial chemicals used in the conversion process," of the 1995 EA provided the maximum capacity of the various industrial chemical storage facilities. Table 2.1-1 of the current ER provides the current "bounding and frequently actual quantities" of these chemicals. The actual quantities for KOH in the current ER [46,500 kg (102,510 lbs)] are greater than the maximum capacities for these chemicals in the 1995 EA [190,410 kg (419,722 lbs)], but no mention is made of expanding the chemical storage capabilities. To satisfy the NRC's requirements for completeness and accuracy of information provided to the Commission (10 CFR 40.9), the licensee is requested to clarify the term "bounding and frequently actual quantities," and explain the relationship between the bounding quantity, the frequently actual quantity, and the maximum capacity.

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Response:

The figures provided in the RAI appear to have been transposed. The maximum KOH storage capacity listed in the 1995 EA is 46,500 kg (102,510 lbs). The bounding quantity listed in the 2005 ER is 190,410 kg (419,722 lbs).

The figures provided in the 1995 EA appear to be storage tank capacities. The origin of the phrase "bounding and frequently actual quantities" is unclear; however, the figures provided in the 2005 ER are the estimated maximum quantities of the specified chemicals onsite at any time during the year as derived for the facility's Year 2004 SARA 312 Report. The reported quantities include the total quantities of the chemicals on site in a variety of vessels, not solely designated storage tanks.

The current storage capacities, as provided in Table 2-3 of the Safety Demonstration Report, are:

Chemical	Storage Capacity (lbs)
NH ₃	120,000 (plus one 80 ton rail car)
HF	424,000 (plus up to four 80 ton rail cars)
KOH	102,400
H ₂ SO ₄	256,000

RAI ER 2.1.2.2-1:

ER Section 2.1.2.2, under the *Gaseous Waste Management* heading, states that the contaminants and types of pollution control devices (including rated efficiencies) for each process stack are presented in Table 2.1-2. ER Table 2.1-2 does not provide this information; however, it was later determined that Safety Demonstration Report (SDR) Table 2-1 does provide the referenced information. A comparison of Table 2.2 of the EA for the last license renewal to the information provided in SDR Table 2-1 identified that the rated efficiencies of many of the pollution control devices listed in these tables have decreased from the values identified in the earlier assessment (NRC, 1995, Table 2.2). For example, the baghouse filter efficiencies have decreased from 99 percent to 95 percent. Please provide the basis and justification for these changes.

Response:

Section 9.3 of the current NRC license indicates that,

Uranium processing areas that produce dusts, mists, or fumes containing uranium or other toxic materials are provided with in-series dust collectors or in-series scrubbers to reduce employee or environmental exposure to as low as reasonably achievable levels. The fabric filter baghouses are rated at greater than 95% efficiency each. Providing two, and sometimes three gaseous cleanup systems in series allows a decontamination factor of greater than 10⁴.

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Therefore, the rated efficiencies provided in Table 2.2 of the 1995 EA (and Table 9.3 of the current license) are for two or more devices operated in series.

The rated efficiencies provided in Table 2-1 of the 2005 Safety Demonstration Report are for each individual pollution control device, without consideration of the fact that the systems are typically operated with two or more devices in series. Therefore, the only change has been in the manner of presenting the data. The rated efficiencies for the systems, which typically include two or more devices operated in series, have not decreased.

RAI ER 2.1.2.2-2:

ER Table 2.1-3, "Discharge Direction, Stack Height, Flow And Annual Uranium Emissions For The Years 2000 – 2004," provides details on the facility's exhaust stacks and emissions from these stacks. A similar table was provided in the EA for the last license renewal. The 1995 EA identified Stack No. 15-57 as the "Exhaust fan maintenance area 1st floor south," for the CaF₂ facility. This stack is not listed in Table 2.1-3 of the current ER. Please confirm that this stack no longer exists. Also, if this stack has been removed, please confirm that there are no exhaust stacks associated with the CaF₂ facility.

Response:

Honeywell has identified the following errors in Table 2.1-3 of the 2005 Environmental Report (ER):

- The description of Stack 1-57 provided in the 2005 ER is incorrect. Stack 1-57 is associated with the Exhaust Fan, Maintenance Area, Feed Materials Building, First Floor South. It appears that this stack was incorrectly numbered Stack 15-57 in the 1995 EA.
- The emissions data for Stack 17-2 and Stack 1-57 have been swapped. This error does not affect the total uranium emissions.

There are no stacks associated with the CaF₂ facility that are monitored for uranium emissions.

RAI ER 2.1.2.2-3:

ER Table 2.1-4 provides the annual non-radiological air emission totals for the 2000 – 2004 timeframe. The corresponding table from the 1995 EA, Table 2.4, provided estimates of the 1993 emission totals for HF, NH₃, and SO₂ only. The values in the current ER indicate a significant change in the quantities of HF and NH₃ emissions (93 percent increase in HF; 77 percent decrease in NH₃). In accordance with 10 CFR 51.45(c), the environmental report is required to include an analysis that considers the environmental effects of the proposed action. To support the NRC's analysis of the environmental effects associated with the increased nonradiological air emissions, the staff requests a description of the operational and/or monitoring changes in the past 10

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years that would account for this change. Explain effluent changes in air emissions from those presented in the 1995 EA (1993 estimated) to those reported in 2005 ER (average 2000 to 2004).

Response:

The decrease in NH₃ emissions is primarily a result of the Honeywell's cessation of use of the sodium/potassium removal wet process. This process was discussed in Section 2.1.1 of the 1995 EA.

Honeywell has identified three factors that may result in an increase in calculated HF emissions:

1. Honeywell has identified an error in its calculation of HF emissions for the year 2004. The corrected calculation yields a total yearly emission of 4.96 tons, which is consistent with previous years' data.
2. The total yearly HF emissions are largely dependent on the extent of Fluorine plant operations. Variations in Fluorine plant operations will therefore result in variations in HF emissions.
3. In mid-2003, upon receipt of its Title V permit, Honeywell's method of calculating HF emissions changed. Previously, HF emissions were calculated based on Fluorine plant operating time multiplied by an emissions factor. Under the Title V permit, HF emissions are calculated based on HF consumption multiplied by an emissions factor. This change in the calculation methods results in some variation in the calculated HF emissions.

RAI ER 2.1.2.2-4:

The EA for the last license renewal period (NRC, 1995, page 2-27) identified a general decline in fluoride concentrations both on- and off-site since the previous license renewal period (1979–1982). However, data presented in Table 2.1-4 of the current ER indicate that fluoride emissions have risen steadily over the past five years. In accordance with 10 CFR 51.45(c), the environmental report is required to include an analysis that considers the environmental effects of the proposed action. To support the NRC's analysis of the environmental effects associated with the increased airborne emissions, the licensee is requested to discuss the cause of the fluoride emissions increases, including any changes in plant operation or maintenance activities that may account for this apparent trend. In addition, please discuss corrective actions (current or planned) to mitigate this apparent trend.

Response:

It appears that the RAI refers to the incorrect table provided in the 2005 ER. In preparing the response to this RAI, Honeywell has referred to Table 2.1-10 of the ER, rather than Table 2.1-4.

In reviewing the updated environmental data provided to the NRC in July 2005, Honeywell has determined that there is no steady rise in fluoride emissions over the past

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five years. Instead, Honeywell believes that the data reveal relatively small fluctuations in the fluoride concentrations until 2003, which was the peak year for five of the seven monitored locations. These fluctuations appear to be related to variations in CaF_2 loading and shipping activities. This correlation is further supported by the fact that the highest concentrations occur at Sample Station Number 10, which is relatively close to, and generally downwind of, the loading point. At no time have these concentrations exceeded any applicable standard, such as that established for the state of Kentucky. The concentrations were reduced to levels more consistent with historical levels following 2003; therefore, Honeywell does not believe that any specific actions are necessary.

RAI ER 2.1.2.3-1:

ER Section 2.1.2.3 notes that uranium concentrations have increased from those reported in the previous license renewal. A comparison of data reported in ER Table 2.1-8 to that in Table 2.9 of the 1995 EA identifies a significant increase (i.e., greater than 100 percent) in uranium concentrations at air sampling Station Nos. 6 and NR-7. In accordance with 10 CFR 51.45(c), the environmental report is required to include an analysis that considers the environmental effects of the proposed action. To support the NRC's analysis of the environmental effects associated with the increased airborne uranium emissions, the licensee is requested to discuss the cause of this increase and corrective actions (current or planned) to mitigate this apparent trend.

Response:

Honeywell's review of the historical data indicates that the increases in offsite uranium concentrations appear to have been the result of the December 22, 2003 incident. If the 2003 data are omitted from the recent years' data, the average uranium concentration at Station 6 for the years 2000-2002 and 2004 is $1.6\text{E-}15$ $\mu\text{Ci/cc}$. This figure is only 6% of the 1979-1982 average concentration provided in the 1995 EA and well within the range of the listed value ($1.2\text{E-}15$ $\mu\text{Ci/cc}$) for 1989-1993. Similarly, the average for 2000-2002 and 2004 at NR-7 is $1.2\text{E-}14$ $\mu\text{Ci/cc}$. This value is less than the 1979-1982 average concentration provided in the 1995 EA and within the range of the listed value for 1989-1993. In addition, the average values for 2004 were $9.12\text{E-}16$ $\mu\text{Ci/cc}$ at Station 6 and $5.38\text{E-}15$ $\mu\text{Ci/cc}$ at NR-7. Both of these values are less than the corresponding values for 1989-1993 as provided in the 1995 EA.

Although Honeywell continues to evaluate the effectiveness of its programs through the efforts of the ALARA Committee, Honeywell does not believe that the data reveal an adverse trend that requires immediate corrective actions.

RAI ER 2.1.2.3-3:

Please provide a summary of any National Ambient Air Quality Standards (NAAQS) or state ambient air monitoring limits exceedances that have occurred during the current license period (i.e., 1995 to present). Additionally, please provide a copy of correspondence to State environmental agencies discussing these exceedances, if any. This information is necessary to address the current status of compliance with applicable environmental quality standards, as required by 10 CFR 51.45(d).

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Response:

There are no recorded exceedances of National Ambient Air Quality Standards or state ambient air monitoring limits and thus no correspondence related to these issues.

RAI ER 2.1.2.3-4:

ER Table 2.1-9 provides environmental air monitoring results for Ra-226 and Th-230 at onsite locations, at the Metropolis Municipal Airport, and at the nearest residence. A review of the data in this table finds that Th-230 readings for year 2003 have increased significantly over those from previous years. In accordance with 10 CFR 51.45(c), the environmental report is required to include an analysis that considers the environmental effects of the proposed action. To support the NRC's analysis of the environmental effects associated with the increased airborne emissions, the licensee is requested to provide an explanation for this increase and discuss the significance of this increase. Additionally, please summarize any planned or actual mitigative actions to prevent this increase from continuing in future years.

Response:

Honeywell's review of the historical data indicates that the increase in Th-230 concentrations is primarily the result of the December 22, 2003 incident.

The causes, results, and corrective actions associated with this event have been well-documented. The data indicate that, in 2004, the Th-230 concentrations returned to a range consistent with the historical record. Therefore, Honeywell does not believe that further corrective actions are warranted.

RAI ER 3.1.1-1:

NRC requirements, in 10 CFR 51.45(c), specify that an environmental report should contain sufficient information to aid the Commission in its development of an independent analysis of the environmental effects of the proposed action. The EA should be based on environmental conditions currently existing in the area (NUREG-1748, Section 3.4.5). Certain information that the staff considers critical to the environmental assessment was based on data provided in the 1995 EA. Therefore, to satisfy the NRC's requirements for completeness and accuracy of information provided to the Commission (10 CFR 40.9), the licensee is requested to confirm that the following information remains current:

ER Section 3.1.1, Site Vicinity, on page 53, discusses agricultural land use in the immediate vicinity of the MTW facility. This information is based on the NRC's 1995 EA. Please verify that this information is still accurate.

ER Section 3.4.3, Water Use, on page 66, states that the nearest downstream public drinking water intake is located in Cairo, Illinois, about 51 kilometers (32 miles) away from the plant. This statement is based on AlliedSignal correspondence dated 1994. Please verify that this statement is still accurate.

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Response:

Table 3.1-1 - Major Land Use Categories Within A Two-Mile Radius Of The Site Center, is based on information from the Illinois Department of Natural History (2003). An updated description of land use is as follows:

The MTW site lies in a primarily undeveloped, rural region of extreme southern Illinois. The dominant land use within a two-mile radius of the MTW is agricultural land, including cropland and grasslands, comprising approximately 34 percent of the total land area. Approximately 20 percent of the land is classified an urban. Forested land comprises approximately 11 percent of the total area. Most of the MTW land outside the exclusion zone remains forested. Wetlands comprise approximately 14 percent.

Based upon a subjective comparison with the 1982 USGS topographic map and the aerial photograph from 1998 (see figure 3.9-1), with the exception of a small expansion of the plant, there have been no obvious or significant trends or changes in the land use since the 1995 ER. The flood plain within the MTW site, between the restricted area and the Ohio River, was cultivated in the past. It is no longer farmed and is returning to a more natural vegetation stand. Cropland on the MTW site is restricted to the approximately 100 acres north of Route 45.

According to USNRC (1995), about 70 percent of the land in Massac County was used for agricultural purposes in the mid-1990s, with corn and soybeans as principal cash crops and cattle and hogs as principal livestock (USDOC, n.d.). The nearest pastureland was then located approximately 1.5 miles northeast of the plant and was used to graze beef cattle. The nearest dairy cattle were grazed approximately eight miles east of the plant.

Reference:

Illinois Natural History Survey's 1999-2000 1:100 000 Scale Illinois Gap Analysis Land Cover Classification, Raster Digital Data, Version 2.0, September 2003.
<http://www.agr.state.il.us>

United States. Department of Commerce. 1987 Census of Agriculture AC87-A-A13, Vol. 1., Geographic Area Series, Part 13, Illinois State and County Data. U.S. Department of Commerce, Bureau of the Census, Washington, DC. n.d.

The nearest downstream public drinking water intake is located in Cairo, Illinois, about 51 kilometers (32 miles) away from the plant. This was confirmed by searching the Illinois Environmental Protection Agency Source Water Assessment and Protection Program (IEPA, 2005).

The Ohio River is utilized by the Illinois American Water Company (IAWC) – Cairo District (Facility No. 0035030) to provide water to approximately 29 percent of Alexander County. This facility draws water from the Ohio River through two surface water intakes (IEPA #70010 and #70011).

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Reference:

Illinois Environmental Protection Agency, 2005. Source Water Assessment and Protection Program. Source Water Protection Fact Sheets.
http://www.epa.state.il.us/cgi-bin/wp/swap-fact-sheets.pl?rm=show_facility_detail&facility_number=0035030&cws=y
Accessed 18 October, 2005.

RAI ER 3.4.8-1:

ER Section 3.4.8 provides a discussion of the groundwater monitoring program. This program is credited, in part, for identification of seepage from the settling ponds into the underlying aquifers. In accordance with 10 CFR 51.45(c), the environmental report should contain sufficient data to enable the staff to develop an independent assessment of this monitoring program. To complete the assessment of the groundwater impacts that would result from the proposed license renewal, the licensee is requested to provide the following additional information regarding the use of this program for the identification of seepage from the settling ponds:

- periodicity of the monitoring activities that would be used to identify pond seepage,
- threshold values for considering a pond liner in leak status;
- corrective actions that would be taken if a liner was determined to be in leak status,
- recent pond sump data; and
- summary of any pond liner leaks identified since the last license renewal period, including severity of leakage and corrective actions.

Response:

The facility's RCRA permit defines the impoundments' liner system as including the flexible membrane liner (FML), the leak detection system, and fifteen feet of in situ soil below the FML. The RCRA permit also establishes requirements for monitoring leakage from the surface impoundments. The monitoring activities that are required to identify pond leakage include the following, to be performed on a weekly basis and after storms:

- a) Inspect the visual portions of each impoundment's EPDM (ethylene propylene diene monomer) liner for tears and punctures;
- b) Determine the volume of liquid in each leak collection sump of each impoundment;
- c) Determine the pH of this liquid;
- d) Remove as much of the liquid from the sump as possible.

Any one of the following, persisting over a period of two consecutive weeks, is considered to be an indication of liner leakage:

- pH greater than or equal to 10.5
- pH increases by 0.5 or more pH units
- Fluoride increases by 2 milligrams per liter or more for two consecutive weeks

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Ponds B, D, and E are currently considered to be in leak status; Pond C is not considered to be in leak status. Only the EPDM liners are known to be leaking. The calculated 2004 daily average leakage (rounded to the nearest whole gallon) from the ponds in leak status is as follows:

- Pond B – 104 gallons per day
- Pond D – 397 gallons per day
- Pond E – 321 gallons per day

As a required corrective action under the RCRA permit, Honeywell has established a Soil Moisture Monitoring Plan for Ponds B, D, and E. A system of 12 installed lysimeters provides samples that are analyzed for pH, fluoride, and potassium concentrations below the in situ clay. Samples are collected from the lysimeters on a quarterly basis.

The RCRA permit also establishes trigger levels for lysimeter samples that require subsequent re-sampling of the affected point. These trigger levels are:

- pH – 8.5
- Fluoride – 5.0 mg/L
- Potassium – 100 mg/L.

There has been no indication of leakage beyond the layer of clay.

In addition, the site's routine groundwater monitoring wells are monitored quarterly for gross alpha, gross beta, pH, fluorides, and conductivity as required by the RCRA permit. This monitoring program has provided data regarding groundwater background levels of the monitored constituents. Reviews of this data have not revealed any confirmed releases from the RCRA-regulated units.

RAI ER 3.7-1:

Noise impacts is an environmental effect that must be addressed in the NRC's assessment (NUREG-1748, Section 3.4.6). ER Section 3.7 addresses noise impacts associated with continued operation of the MTW facility. The ER states that the only noise-sensitive receptors (NSRs) located in close proximity to the site are "Category B rural residences typically assigned a [noise abatement criteria] NAC of 72dBA. However, ER Table 3.7-1 indicates that residences are considered Category E NSRs with an assigned NAC of 52 dBA (interior). The licensee is requested to explain why residences in the vicinity of the facility are not considered Category E NSRs in accordance with 23 CFR 772 [ER Reference (FHA, 1977)].

Response:

The noise abatement criterion (NAC) for an Activity Category B facility is an exterior average noise level of 67dBA (the level presented in the ER is an error). The NAC for an Activity Category E facility is an interior average noise level of 52dBA. (FHWA, 2005). Both of these categories include residences, motels, schools, churches, libraries, and hospitals. The difference is where the ambient noise level is taken. The Category E takes into account the noise abatement qualities of the facility structure. Since people

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may spend considerable time outside their residence, the exterior NAC was presented in the Environmental Report.

Reference:

Federal Highway Administration. FHWA (Federal Highway Administration), 2005. Procedures for Abatement of Highway Traffic Noise and Construction Noise. Title 23 of the Code of Federal Regulations, Part 772 (23 CFR 772). April 1, 2005 edition.

RAI ER 3.9-1:

Table 3.11-1, Occupational Injury and Fatality Rates, on page 151, provides an overview of Honeywell's occupational injury rates in the past 10 years. Please summarize the method for determining the OSHA Recordable Incident Rate, and compare this incident rate to industry standards.

Response:

The OSHA Recordable Incident Rate is determined as follows:

$$\frac{(\text{No. of Recordable Injuries})(200,000)}{\# \text{ Man-Hours Worked During the Year}}$$

A review of OSHA data (NAICS Code 325, Chemical Manufacturing; previously SIC 28, Chemicals and Allied Products) provides the following comparative data:

Year	Industry Rate ^{Note 1}	MTW Rate
1995	4.8	1.42
1996	4.8	1.58
1997	4.8	1.83
1998	4.2	2.61
1999	4.4	2.19
2000	4.2	1.49
2001	4.0	1.23
2002	3.3	0.92
2003	3.4	1.83
2004	Note 2	0.8

¹ From U.S. Department of Labor News Releases available at URL <http://www.bls.gov/iif/oshsum.htm#99Summary%20News%20Release>

² OSHA Data not available.

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RAI ER 4.2-1:

Transportation impacts is an environmental effect that must be addressed in the NRC's assessment. Section 4.2 of the ER provides a brief assessment based on NUREG-0170, Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes, dated 1977. The EA should be based on environmental conditions currently existing in the area (NUREG-1748, Section 3.4.5). Therefore, to confirm the current applicability of the environmental assessment in NUREG-0170, the licensee is requested to provide the following information regarding shipments of UF₆ product from the MTW site:

- Discuss the mode of transportation for shipments of UF₆ product from the MTW facility;
- Provide the average number of annual shipments that occur each year; and
- Discuss whether there have been any traffic accidents regarding the shipment of UF₆ product from the MTW facility to U.S. Enrichment Corporation (USEC) or domestic ports for shipping to foreign customers. If so, please indicate whether these traffic accidents resulted in any radiological release.

Response:

All UF₆ product is shipped from the Metropolis facility by truck. The average number of shipments over the 2000 – 2004 period was 565.6 shipments per year.

There have been no reported traffic accidents involving UF₆ shipments from the Metropolis facility during the 2000 – 2004 period.

RAI ER 3.4.8.3-1:

In accordance with 10 CFR 51.120, environmental documents that are related to environmental reports, environmental assessments, and findings of no significant impact must be made available at the NRC web site, <http://www.nrc.gov>, and/or at the NRC Public Document Room. To complete the groundwater assessment, the staff needs to review the relevant documentation, as referenced in the ER. The licensee is requested to provide a copy of the following documents pertaining to RCRA Groundwater Investigation Monitoring:

- Honeywell report, "RCRA Groundwater Investigation Report," submitted to IEPA in August 2003;
- Andrews Environmental Engineering report, "RCRA Groundwater Investigation Timeline/Summary," dated April 2005;
- Andrews Environmental Engineering report, "RCRA Groundwater Investigation Report;" dated January 2005,
- The proposed work plan, proposing additional soil sampling and additional perimeter groundwater wells, which was to be submitted to IEPA before May 20, 2005; and
- Any other reports or correspondence necessary to provide an understanding of the basis and status of the RCRA groundwater issues at the Honeywell facility.

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Response:

Pursuant to discussion with NRC, a copy of the September 6, 2005 correspondence from the Illinois Environmental Protection Agency (IEPA), which establishes conditions governing IEPA's approval of the Metropolis Works RCRA Groundwater Workplan, is enclosed with this submittal. The documents requested in the RAI are maintained on site and are available for NRC review.

RAI PSM 1:

In accordance with 29 CFR 1910.119, and as provided in application para 5.3.1, Honeywell has committed to the minimum for a satisfactory chemical safety evaluation as provided by compliance with the OSHA Process Safety Management requirements ("PSM Rule"). However, for licensing compliance the license should provide a commitment, as part of the Safety Analysis Report or as a proposed license condition, specifically to the subparagraphs. At a minimum the following areas should be addressed.

- 1) process safety information
- 2) process hazard analysis
For example Honeywell could utilize the Failure Modes & Effects Analysis performed in spring 2004
- 3) operating procedures
- 4) training (initial employee training, refresher training, subcontractor training. etc.)
- 5) pre-startup safety reviews
- 6) inspection, testing, and maintenance of key safety components
Include an identification of the critical equipment lists
- 7) hot work permit system
- 8) management of change program
- 9) incident investigation program
- 10) emergency planning
- 11) audits and assessments

Response:

The content of the license renewal application and Safety Demonstration Report with regard to Process Safety Management (PSM) reflects Honeywell's understanding of discussions with the NRC prior to submittal of these documents. Specifically, Honeywell understood that the Metropolis site is subject to the PSM requirements of 29 CFR 1910.119, including the subparagraphs, regardless of the content of the NRC license and that inclusion of PSM Program details in the license renewal application was not necessary.

Prior to full implementation of the renewed license, Honeywell will revise the Safety Demonstration Report to add information on implementation of the PSM subparagraphs. These changes will be made consistent with the requirements of Section 8.2 of the license renewal application.

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RAI HP 1:

In Section 1.2.2 "Site Description" the licensee states that "Plant operations are conducted in a fenced restricted area (as defined at 10 CFR 20.1003)."

10 CFR 20.1003 defines restricted area, in part, as an area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive material.

From observation by the inspectors, the licensee's parking lot is within the site description of the fenced restricted area. However, it appears during the day shift that access is not limited to the parking lot, but is limited at the security force posted at the entrance to the administration building.

Utilizing 10 CFR 20.1003 as a guide (it defines unrestricted area as an area, access to which is neither limited nor controlled by the licensee), the single fenced area around the parking lot compared to the double fenced area connecting the administration building should be redefined in the licensee's application as to what part is considered restricted vs. unrestricted.

Response:

Radioactive material, in the form of uranium hexafluoride heels, is located in empty cylinders between the two concentric security fences and adjacent to the Administration Building and parking lot. These empty uranium hexafluoride cylinders currently lie within a posted Radioactive Material Area and form a portion of the security barrier for the site. The discussion of the definition of "controlled area" provided on Page 3-10 of NUREG-1736, "Consolidated Guidance: 10 CFR 20 – Standards for Protection Against Radiation," (USNRC, October 2001) indicates that, "If an area must be controlled for radiological reasons, then it becomes a restricted area." Consistent with this guidance, Honeywell has considered the entire area within the outer security fence to be within the restricted area.

With regard to the measures used to limit access to this area, the discussion of the definition of "restricted area" provided on Page 3-19 of NUREG-1736 indicates that, "Access to a 'restricted area' must be controlled to prevent unauthorized entry. The controls need not be physical barriers, such as locked doors, but may include administrative controls, such as surveillance." Honeywell's Security force maintains visual surveillance over, and is empowered to limit access to, this area. Honeywell believes these surveillance measures are consistent with NRC's guidance addressing restricted area access control measures as provided in NUREG-1736.

To eliminate potential confusion regarding the status of the area between the outer fence and the Administration Building and inner fence, including the parking lots, Honeywell intends to re-establish the boundaries of the restricted area to include only that area within the inner security fence. The Administration Building currently forms one portion of this boundary on the northern portion of the site. The entirety of the Administration Building that lies within the Security checkpoint will fall within the restricted area. The parking lots are outside of the boundary formed by the inner fence and the Administration Building and will lie outside of the restricted area.

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With regard to the uranium hexafluoride cylinders located between the two concentric Security fences, these cylinders will be properly posted and labeled in accordance with 10 CFR 20 and the requirements of the facility's license. Consistent with discussions held with NRC during October 2005, they will be located outside of the designated restricted area. Honeywell recognizes that the placement of licensed material outside of the restricted area is not consistent with the guidance provided in NUREG-1736; however, access to this area will be limited by the outer fence and by Security force visual monitoring of the entry point, consistent with existing practice.

The boundaries of the restricted area are not clearly designated in the License Renewal Application; therefore, no change to the application is necessary to implement these changes. Section 4.2.1 of the Safety Demonstration Report will be revised to state: "The restricted area includes that area within the inner security fence, including the area within the Administration Building that lies within the Security checkpoint."

Honeywell notes that 10 CFR 20 also establishes definitions for the terms "controlled area" and "unrestricted area." The primary significance of the unrestricted area is that the hourly dose restriction established in 10 CFR 20.1301(a)(2), and the requirements for demonstrating compliance with the dose limits for individual members of the public established in 10 CFR 20.1302(b)(2), apply to conditions at the boundary between the controlled area and the unrestricted area. Although the boundaries of these areas have not been defined in Honeywell's previous license submittals, Honeywell has historically considered the controlled area to include that area south of U.S. Route 45 owned by Honeywell. By definition, the unrestricted area includes all those areas not owned by Honeywell, and all areas north of U.S. Route 45, regardless of ownership.

RAI HP 2:

[In] Section 1.7 "Exemption and Special Authorizations" the licensee requests exemption from the requirements of 10 CFR 20.1904(a) as applied to labeling of containers. In lieu of labeling each individual radioactive material container, the licensee wishes to establish one or more Radioactive Material Areas within the restricted area and post all entrance or access points to the area with signs bearing "CAUTION RADIOACTIVE MATERIAL AREA".... Any area or container in this plant (or "beyond this point") may contain radioactive materials.

It is not clear if the licensee wishes to be exempted from all of the requirements of 10 CFR 20.1904(a) or just be exempted from the "Caution radioactive material area labels only." There are other portions of 10 CFR 20.1904(a), which require: identifying the radionuclide(s) present, estimate the quantity of radioactivity, the date the activity was estimated, radiation levels, kinds of material and mass enrichment. Please state the specific provisions of 10 CFR 20.1904(a) from which an exemption is requested.

Response:

In Section 1.7.1 of the license renewal application, Honeywell has requested a continuation of its existing exemption from the radioactive material labeling requirements of 10 CFR 20.1904(a). The information "requirements" cited in RAI HP 2 are actually "suggestions" for the types of information that may be provided on a radioactive material label to meet the broader requirement for the label to provide "sufficient information to

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permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures.”

In the license renewal application, Honeywell is seeking exemption from all of the requirements of 10 CFR 20.1904(a). Note that the requested exemption applies only to containers of natural uranium and the resulting intermediates and byproducts of uranium process operations. As indicated in Section 4.2.5 of the Safety Demonstration Report, the radiological safety information that may typically be provided by a radioactive material label will instead be provided via area postings and radiation safety training.

RAI HP 3:

Section 3.2.1.2 “Protective Clothing” states, in part, “Prior to exiting the restricted area, individuals deposit protective clothing in appropriate containers for in-plant laundering and reuse or disposal.” The comment from Section 1.1.2 Site Description, regarding where exactly the restricted area(s) begins and ends. Please clarify if the restricted area includes the parking lot.

Response:

As discussed in the response to RAI HP 1, Honeywell intends to modify the boundaries of its restricted area (as defined in 10 CFR 20.1003) to include only that area bounded by the inner security fence and the Administration Building. Therefore, the parking lots will not lie within the restricted area. Under normal (i.e., non-emergency) conditions, individuals who wear protective clothing shall, prior to exiting potentially contaminated portions of the restricted area, remove this clothing or be monitored for the presence of radioactive contamination at levels exceeding those specified in Section 2.6 of Regulatory Guide 8.30, “Health Physics Surveys in Uranium Recovery Facilities” (USNRC, May 2002).

RAI HP 4:

Section 3.2.6, “Surface Contamination,” defines “controlled areas” as plant areas in which uranium is processed and could be present in un-encapsulated form. In addition, “uncontrolled areas” are defined as plant areas where food may be consumed, locker rooms, and entrance/exit areas from the plant.

10 CFR 20.1003 defines “controlled area” as an area outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason. 10 CFR 20.1003 defines “restricted area,” in part, as an area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive material. An “unrestricted area” is defined as area, access to which is neither limited or controlled by the licensee.

The licensee’s definition of “controlled area” appears to be equivalent to the 10 CFR 20.1003 definition of “restricted area.” Please revise the definitions in Section 3.2.6 to be consistent with 10 CFR 20.1003.

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Response:

The terms "controlled area," "intermediate area," and "uncontrolled area" discussed in Section 3.2.6 of the License Renewal Application are used consistent with NRC's guidance provided in Section 3.2.6 of Regulatory Guide 3.55, "Standard Format and Content for the Health and Safety Sections of License Renewal Applications for Uranium Hexafluoride Production" (USNRC, April 1985). Consistent with Regulatory Guide 3.55, these terms are used to delineate contamination survey frequencies and action levels based on area usage; they are not associated with a specific type of access control applied to the area.

The usage of the term "controlled area" in Regulatory Guide 3.55 is not consistent with the usage of the same term in 10 CFR 20. Honeywell does not intend for its usage of the term "controlled area" in Section 3.2.6 of the License Renewal Application to be considered equivalent to the term "restricted area" as defined in 10 CFR 20.1003.

RAI HP 5:

Please clarify if the Feeds Materials Building control room, and other areas where food is consumed, is considered controlled or unrestricted areas as defined by 10 CFR 20.100[3]. If it is considered restricted, please provide the basis for why it is acceptable to consume food in those areas.

Response:

The Feed Materials Building Control Room and Main Lunch Room are located within the restricted area as defined in 10 CFR 20.1003. In establishing controls over these areas, Honeywell has referred to Section 2.5 of Regulatory Guide 8.30, which indicates that:

In rooms where work with uranium is not performed, such as eating rooms, change rooms, control rooms, and offices, a lower level of surface contamination is likely to be present. These areas should be spot-checked weekly for removable surface contamination using smear tests. The areas should be promptly cleaned if surface contamination levels exceed the values shown in Table 2.8.

Note: There is no Table 2.8 in Regulatory Guide 8.30; the appropriate table appears to be Table 2, which immediately follows the text above.

Based on this guidance, Honeywell has inferred that the presence of eating areas within the restricted area is not prohibited, provided that adequate controls are established.

As indicated in Table 4-7 of the Safety Demonstration Report, areas where food is consumed, including the Main Lunchroom and FMB Control Room, are considered uncontrolled areas (within the restricted area) as discussed in Section 3.2.6 of Regulatory Guide 3.55 (Note: The term "uncontrolled area" as discussed in Regulatory Guide 3.55 is not related to the term "controlled area" defined in 10 CFR 20.1003). Uncontrolled areas are subject to more frequent (weekly) contamination surveys and lower contamination action levels as discussed in Section 2.5 of Regulatory Guide 8.30. To provide a level of conservatism above that suggested by Regulatory Guide 8.30,

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Honeywell implemented a site action level (200 dpm/100 cm²) that is only 20% of the removable surface contamination limit discussed in Table 2 of Regulatory Guide 8.30.

Section 2.6 of Regulatory Guide 8.30 provides additional guidance for control of eating areas as follows:

Visual examination for yellowcake is not sufficient evidence that the worker's skin or clothing is sufficiently free of contamination to permit the workers to leave the work environment. Normally such contamination can be adequately controlled if yellowcake workers wash their hands before eating, shower before going home, and do not wear street clothes while working with yellowcake in a UR facility.

Honeywell's initial training for new employees addresses requirements personal cleanliness while working in the facility.

Additional controls that support efforts to maintain an appropriate level of radiological cleanliness include provisions for employees to remove heavily contaminated protective clothing, shower, and don laundered protective clothing in the FMB following completion of work that involves a likelihood of significant clothing contamination. These provisions are also addressed in the initial training course provided to new employees.

In summary, Honeywell's review of its existing controls for eating areas within the restricted area indicates that these controls are fully consistent with NRC's guidance as provided in Regulatory Guide 8.30.

Honeywell's Health Physics Technicians have collected over three thousand smears in eating areas thus far during 2005. A review of the survey data indicates that only 0.7% of the measured removable surface contamination values exceeded the site action level, with a peak value of 439 dpm/100 cm² (less than half of the limit suggested in Table 2 of Regulatory Guide 8.30). The historical surface contamination data clearly indicate that the existing contamination monitoring and control measures have been effective in maintaining the designated areas in a condition that is suitable for eating and drinking.

Despite this successful record, Honeywell recognizes that a small potential exists for affected individuals to ingest radioactive contamination due to the presence of contamination on their hands or clothing. Having reviewed NRC's guidance, existing site practices, and site-specific conditions, Honeywell intends to reinforce its contamination controls for authorized eating areas within potentially contaminated portions of the restricted area as follows:

- Honeywell will revise its Administrative Procedures to clearly require that individuals who work with unsealed quantities of radioactive materials wash their hands prior to eating or drinking (other than drinking from foot-operated fountains).
- Honeywell will establish conspicuous postings at the entrances to all authorized eating areas within potentially contaminated portions of the restricted area to remind workers of the requirements for eating and drinking.

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- Honeywell will reinforce the requirements for personal cleanliness and use of authorized eating areas during periodic radiological control retraining, such as during "B" Council meetings.

RAI HP 6:

Regarding Section 3.2.4, "Radioactivity Measurement Instrumentation," please indicate by what industry standard the instruments are calibrated and whether the sources used are National Institute of Standards and technology (NIST) traceable.

Response:

Radioactivity monitoring instruments will be calibrated in accordance with the guidance provided in Section 8 of Regulatory Guide 8.30, "Health Physics Surveys in Uranium Recovery Facilities" (USNRC, May 2002). Radioactive sources used for radioactivity monitoring instrument calibration shall be traceable to NIST standards.

RAI HP 7:

Because the licensee indicates that a cylinder rupture is not a credible event, please provide basis for removing from the license application controls related to the storage of liquid UF₆ cylinders, including the four-day cooling period.

Response:

Honeywell does not intend for the License Renewal Application to be misconstrued as implying that a cylinder rupture is a non-credible event.

One of Honeywell's goals in developing the License Renewal Application was to clarify the content and applicability of Section 1.5.1 of the current license, which provides a description of specific UF₆ cylinder handling requirements. The format of this section is somewhat unclear. Honeywell's analysis of this section indicated that, although the introductory text accompanying Substeps 1 through 5 indicates that these controls are applied only to cylinders that are to be heated and sampled, much of this text is broadly applicable to all UF₆ cylinders. Honeywell therefore clarified and simplified the text and broadened its applicability to all filled UF₆ cylinders. The clarified text has been provided in Sections 1.6.1 and 1.6.2 of the License Renewal Application and Sections 6.2.1 and 6.2.2 of the Safety Demonstration Report. Honeywell believes that the revised text is clearer, more accurate, and more appropriate for retention in the License Renewal Application and Safety Demonstration Report.

The portions of the previous text that have been omitted describe:

1. General arrangements for UF₆ cylinder crane lifts. This text is descriptive in nature and does not establish operational limits on crane operations.
2. General arrangement for UF₆ cylinder transport on mobile storage buggies. This text is descriptive in nature and does not establish operational limits on cylinder transport.

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3. A requirement for a four-day cooling period for filled cylinders. With regard to requirements for cooling of uranium hexafluoride cylinders, Honeywell is subject to the regulations of the U.S. Department of Transportation, in particular 49 CFR 171 – 173. 49 CFR 173.420(a)(3) requires that uranium hexafluoride be shipped in solid form. This requirement applies regardless of the provisions of Honeywell's NRC license. Honeywell believes that the measures implemented to ensure compliance with this regulatory requirement, including minimum cylinder storage periods, are sufficient to ensure that uranium hexafluoride is shipped only in solid form. Based on this belief, Honeywell deleted the minimum cylinder cooling period requirement from the License Renewal Application. However, Honeywell recognizes the importance of the minimum cooling period to the reduction of hazards associated with possible cylinder rupture events. Honeywell will continue to store filled UF₆ cylinders on the mobile storage buggies, in the designated cooling areas, for at least four days prior to shipment or transport to a cylinder storage area.

RAI HP 8:

Regarding Section 2.6.2.1, "Operator Attentiveness," since no restrictions regarding hours of work were provided, please describe how the operators are monitored to ensure that they are fit for duty.

Response:

Section 2.6.2.1 of the License Renewal Application indicates that Honeywell will establish procedures governing a number of issues related to operator attentiveness, including operator fitness for duty. Limitations on working hours are one element of a program that ensures fitness for duty. The actual details for the controls associated with operator fitness for duty will be incorporated into these procedures. Honeywell currently limits operator working hours to 80 hours in seven days and 16 hours in any 24 hour period unless other arrangements are specifically authorized by the Plant Manager or his designee. Any instance in which these limitations are exceeded requires supervisory monitoring of the affected individual's mental alertness. The procedures used to govern operator attentiveness, including fitness for duty, will be available for NRC review.

Other Issues

Upon further review of its License Renewal Application, Honeywell has determined that its requirements for use of respiratory protection devices, as established in Section 3.2.5.2, are not fully consistent with current NRC guidance, as established in Regulatory Guide 8.15, "Acceptable Programs for Respiratory Protection" (USNRC, October 1999). Specifically, Honeywell has indicated that any individual entering a posted Airborne Radioactivity Area, other than incidental entry, will be required to wear a respirator. This requirement does not allow for consideration of the actual exposure time and conditions, consistent with the ALARA requirements of 10 CFR 20.1702(a) and the guidance provided in Section 2 of Regulatory Guide 8.15.

To correct this condition, Honeywell proposes to revise Section 3.2.5.2 of its License Renewal Application as follows:

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Honeywell shall implement a Respiratory Protection Program consistent with the guidance provided in Regulatory Guide 8.15 (Ref. 5). Individuals who work in specified areas shall carry a half-face respirator for potential emergency use. Honeywell shall establish written procedures that clearly define the conditions that require respirator usage for radiological protection, such as appropriate consideration of airborne radioactivity concentrations and planned exposure times and work activities, consistent with the facility ALARA program. When conditions indicate that the protection provided by a half-face respirator may be inadequate, respiratory equipment that provides greater protection shall be used. For purposes of calculating individual exposure to airborne radioactivity, protection credit may be taken when the airborne radioactivity concentration exceeds the applicable DAC value. Honeywell shall use the respiratory protection factors provided in 10 CFR Part 20, Appendix A.

Corresponding changes to Section 4.9 of the Safety Demonstration Report will also be required and will be implemented in accordance with Section 8.2 of the License Renewal Application.

Honeywell believes that this procedure-based approach will allow for the development of a respiratory protection program that is more consistent with current NRC guidance and industry practice and may ultimately reduce the use of respirators by the work force.

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ATTACHMENT A



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 - (312) 814-6026

ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

217/524-3300

September 6, 2005

Certified Mail
7002 3150 0000 1254 2507

Mr. Rory O'Kane
Honeywell International, Inc.
Route 45 North
P.O. Box 430
Metropolis, Illinois 62960

Re: 1278540002 - Massac County
Honeywell Intl, Inc.
ILD006278170
Log No. B-65-CA-19
RCRA Permit



Dear Mr. O'Kane:

This letter is in response to the May 20, 2005 RCRA Groundwater Workplan submitted by Sean C. Chisek of Andrews Environmental Engineering Inc. on behalf of Honeywell International, Inc. The May 2005 workplan proposed further evaluation of potential source(s) of contaminants detected in groundwater monitoring wells within the Main Plant area of the above-referenced facility. In addition, the plan proposed further investigation of potential soil contamination south of the Painter's Building (Area R) and west of the Liquid Nitrogen Facility (Area Q) at the facility

As you are aware, this investigation is being conducted as part of a Compliance Commitment Agreement accepted by Illinois EPA in response to Violation Notice No. L-2001-01382 regarding apparent groundwater quality violations at the subject facility. The subject facility also has a RCRA permit which, among other things, requires it to conduct corrective action, as necessary on solid waste management units at the facility.

An initial Groundwater Investigation Plan at Honeywell main plant was approved by Illinois EPA on April 1, 2003. The results of the investigation were documented in a Groundwater Investigative Report approved with conditions and modifications by Illinois EPA's November 21, 2003 and February 3, 2004 letters. On March 21, 2004 Honeywell submitted a Groundwater Workplan for further investigation and on May 14, 2004 Honeywell submitted an Addendum 1 to the Workplan. The Workplan and addendum were approved by IEPA on July 26, 2004 and further modified on September 15, 2004 and February 3, 2005.

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ELGIN - 595 South State, Elgin, IL 60123 - (847) 608-3131 • PEORIA - 5415 N. University St., Peoria, IL 61614 - (309) 693-5463
BUREAU OF LAND - PEORIA - 7620 N. University St., Peoria, IL 61614 - (309) 693-5462 • CHAMPAIGN - 2125 South First Street, Champaign, IL 61820 - (217) 278-5800
SPRINGFIELD - 4500 S. Sixth Street Rd., Springfield, IL 62706 - (217) 786-6892 • COLLINSVILLE - 2009 Mall Street, Collinsville, IL 62234 - (618) 346-5120
MARION - 2309 W. Main St., Suite 116, Marion, IL 62959 - (618) 993-7200

The subject May 2005 workplan was submitted to meet the requirements of Illinois EPA's March 21, 2005 letter responding to a report documenting the results of the approved investigation effort, and was reviewed as a request to modify the on-going corrective action activities described above. Illinois EPA's review of the May 20, 2005 workplan has determined that this modification request can be approved subject to the following conditions and modifications:

1. By February 1, 2006, the facility must submit a report summarizing the approved supplemental groundwater investigation activities. The report must include, but not be limited to, the following:
 - a. A discussion of:
 - i. The reason for the sampling/analysis effort; and
 - ii. The goals of the sampling analysis effort.
 - b. A description of the procedures used for:
 - i. Sample collection;
 - ii. Sample preservation;
 - iii. Chain of custody; and
 - iv. Decontamination of sampling equipment.
 - c. Discussion of the results of any field screening efforts.
 - d. A description of the procedures used to analyze the groundwater samples, including:
 - i. The analytical procedure used, including the procedures used, if any, to prepare the sample for analysis;
 - ii. Any dilutions made to the original sample;
 - iii. Any interferences encountered during the analysis of each sample;
 - iv. The practical quantitation limit (PQL) achieved, including justification for reporting PQLs which are above SW-846 levels; and

- v. A description of all quality control/quality assurance analyses conducted, including the analysis of lab blanks, trip blanks and field blanks.
- e. A description of all quality assurance/quality control efforts made overall.
- f. A tabular summary of all analytical data, including QA/QC results.
- g. Copies of the final laboratory sheets which report the results of the analyses, including final sheets reporting QA/QC data.
- h. A discussion of the collected data. This discussion should: (1) identify those sample locations where contaminants were detected and the concentrations of the contaminants; and (2) evaluate the data collected. This discussion should focus on the data collected during the recent investigation and any appropriate data previously collected.
- i. Logs of the borings made during the required subsurface investigation and/or for monitoring well installation.
- j. A description of the procedures used in carrying out the subsurface investigation (including the boring procedures) and in any installation of the monitoring wells.

- k. ~~Results of all tests conducted in-situ or in the laboratory and a discussion of the procedures used in carrying out the tests.~~
- l. Completed Illinois EPA Well Completion Reports.
- m. Scaled drawings showing the location where all borings were made and where all monitoring wells were installed.
- n. Well development procedures.
- o. A discussion of the geology and hydrogeology of the areas being investigated based on the most recently collected data, including:
 - i. A detailed description of the geology;
 - ii. Physical characteristics of each geologic strata encountered;
 - iii. Identification of water bearing units encountered;

- iv. Depth to the water table;
 - v. The horizontal and vertical components of groundwater flow in the water bearing units;
 - vi. The hydraulic conductivity of the water bearing units; and
 - vii. A minimum of two cross-sections depicting the subsurface geology and hydrogeology. These cross-sections should be as close to perpendicular to each other as possible, so that a three-dimensional presentation of this information can be depicted;
 - viii. Water level measurements made prior to the collection of the groundwater samples.
-
- p. Maps and supporting data identifying the piezometric surface of the groundwater beneath the facility and the direction of groundwater flow.
 - q. Isoconcentration maps depicting the extent of groundwater contamination for each contaminant of concern as determined by the investigation.
 - r. A course of action for groundwater based on the results of the investigation.

2. The facility's proposal to submit an evaluation of the interim groundwater monitoring program (as required by Condition 7.k of the July 26, 2004 Illinois EPA letter) as part of the report required in Condition 1 above is hereby approved. The evaluation must include, but not be limited to, the following information:

- a. Purpose of submittal;
- b. A tabular summary of exceedences of appropriate 35 Ill. Adm. Code 620.410 Groundwater Quality Standards (GQSs) or 35 Ill. Adm. Code 742, Tier 1, Class I Groundwater Remediation Objectives (GROs);
- c. Groundwater elevation maps depicting groundwater flow direction during each previous year's sampling event;
- d. Isoconcentration maps depicting the extent of the contaminant plume during each previous year's sampling event;
- e. Discussion regarding the effectiveness of the network to adequately monitor groundwater contamination; and

- f. Course of action including proposed modifications (if any) to the monitoring program and rationale for each proposed modification.
3. The Illinois EPA has determined that the facility has met the requirements of Condition 1 of the March 21, 2005 Illinois EPA letter (Log No. B-65-CA-16).
4. The facility must continue to monitor groundwater in accordance with Condition 7 of the July 26, 2004 Illinois EPA letter (Log No. B-65-CA-10), and as modified by the September 15, 2004 letter (Log No. B-65-CA-12), the February 3, 2005 letter (Log No. B-65-CA-15) and this letter.
5. In the former Area R – Storage Area, 4 soil samples shall be taken at SB-08, SB-09, SB-10, and SB-11 as shown in Figure 2 of the subject plan. The soil borings shall be advanced to 1 foot below the existing gravel and then a continuous soil sample shall be obtained from the top 12 inches below the gravel interface.
 - a. The entire 12" soil sample shall be screened using a PID for the presence of Volatile Organic Compounds (VOCs) and visually inspected for discoloration or odors. At the location where the PID reading indicates the highest likelihood for organic impacts, a duplicate sample shall be taken and tested for VOCs in the laboratory. The list of VOCs to be tested in soil must include those parameters that are present in the groundwater monitoring wells at the main plant facility and potentially in soil due to operations at this location.
 - b. A sample must also be collected from the 12" soil column at each location and analyzed for pH and total arsenic and SPLP arsenic
6. In Area M – Liquid Nitrogen Facility one (1) soil sample location (SB-12) as close to the speculated location of the former excavation/structure must be evaluated for potential contamination from this area. A soil sample will be collected from SB-12 at the 2, 4, 8, and 12 -foot depths below ground surface. Soil samples must be analyzed for pH, Arsenic and VOCs. The list of VOCs to be tested in soil must include those parameters that are present in the groundwater monitoring wells at the main plant facility and potentially in soil due to operations at this location. Soil samples obtained at each depth will be screened for the presence of VOCs and visually inspected for discoloration. At each depth, a duplicate sample, at the interval having the highest PID reading, will be obtained for laboratory analysis of analytical parameters.
7. The enclosed Corrective Action Form must be completed and accompany all information submitted to the Illinois EPA associated with the activities described in this letter. As noted on this form, two copies must accompany the original for all submittals, so that the information submitted can be distributed to Illinois EPA personnel and regional offices.

Mr. O'Kane
Log No. B-65-CA-19
Page 6

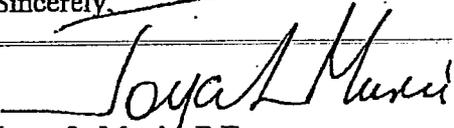
8. RCRA corrective action activities at this facility must meet the requirements of: (1) the facility's RCRA permit (Log No. B-65 and associated modifications); (2) 35 Ill. Adm. Code 620.724 and 742; and (3) Illinois EPA approval letters for such activities.

This action shall constitute Illinois EPA's final action on the subject submittal. Within 35 days after the date of mailing of Illinois EPA's final decision, the applicant may petition for a hearing before the Illinois Pollution Control Board to contest the decision of Illinois EPA, however, the 35-day period for petitioning for a hearing may be extended for a period of time not to exceed 90 days by written notice provided to the Board from the applicant and the Illinois EPA within the 35-day initial appeal period.

Work required by this letter, your submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Should you have any questions regarding the groundwater aspects of this project, please contact Scott Kaufman at (217) 785-6869; questions regarding any other aspect of this project should be directed to Karen Nachtwey at (217) 524-3273.

Sincerely,


Joyce L. Munig, P.E.
Manager, Permit Section
Bureau of Land

JLM:KEN/mls/051411s.doc

JLM OSK IBW
Enclosure: Corrective Action Certification Form

cc: Andrews Environmental Engineering, Inc. -- Sean C. Chisek, P.E.