

J. White (PI)

From: "Adler, Joseph J." <jadler@entergy.com>
To: <jrw1@nrc.gov>
Date: 07/10/2006 1:46:26 PM
Subject: FW: EPA Background Data and Proposed Investigation Levels / Trigger Values with response actions

<<DRAFT.doc>> John,

For your comment, attached is a draft of proposed investigation levels and trigger values with corresponding response actions. We are proposing that these be used during our current investigation phase, as well as be incorporated into our long-term ground water monitoring program.

Attached below are three files from EPA containing historic Tritium concentrations in surface, ground and drinking water. The range of concentrations overlaps many of the results we have reported as positive results for locations outside of the known ground water plume. This, combined with the higher statistical probability of false positives associated with very low LLDs support the proposed investigation levels being higher than the analytical LLDs.

Jay Adler

From: Farr, Harvey
Sent: Monday, July 10, 2006 12:41 PM
To: Adler, Joseph J.; Lavera, Ronald; Sachatello, Ronald ; Donahue, Patrick J; 'David Winslow'; Mayer, Donald M
Subject: EPA Background Data

Jay,

These are the reports from the EPA Radnet. These are in the HTML format. I have pasted the data into Exel and looked at the 95th percentile since 1990 a swell as the Max, Mins and averages. The query of radnet is found at http://oaspub.epa.gov/enviro/erams_query.simple_query.

<<EPA - Envirofacts Warehouse - RadNet - H-3 Surface Water.htm>> <<EPA - Envirofacts Warehouse - RadNet H-3 Precipitation.htm>> <<EPA - Envirofacts Warehouse - RadNet - H-3 Drinking Water.htm>>

B-2

DRAFT

Proposed Investigation Levels /Trigger Values and Response Actions (To Be Incorporated into Long-Term Monitoring Program)

Off-Site Property Boundary Monitoring Wells

Sampling of these monitoring wells, which are MW-40 and 51 (on-site), and Lafarge wells Nos. 1, 2 and 3 (off-site) is conducted on a periodic basis to monitor for indications of contaminant migration in ground water towards IPEC's south-western off-site boundary. Samples from these wells are routinely analyzed for Tritium, Strontium-90 and gamma emitting radionuclide concentrations.

Tritium and Sr-90 Investigation Levels for these monitoring wells have been established. If the Investigation levels are exceeded, management is to be alerted that there are indications that Tritium or Strontium-90 may be present in the monitoring wells. These monitoring wells serve as sentinel wells are not expected to contain plant originated radionuclides. Therefore, Investigation levels for these monitoring wells have been set as low as possible, with consideration of the need to avoid alerts due to false positives. Investigation levels are:

Tritium: 500 pCi/L
Strontium-90: 1.5 pCi/L

In the event that Investigation levels are exceeded for MW-40 and 51, IPEC GW Project Management will take the following actions:

- Verify the validity of the analytical result by recounting the sample or re-sampling the well.
- If the result is verified write a Condition Report (CR), and
- Notify NRC and State, and offer split- sample opportunity, and
- Notify Stakeholders via normal status update process.
- Consider sampling other potentially affected monitoring wells
- Evaluate the need for a more frequent sampling regimen
- Other actions as deemed appropriate by knowledgeable experts

In the event that Investigation levels are detected in the off-site Lafarge monitoring wells, a higher level of management attention is required, and the actions described below for Trigger Values shall be initiated.

Trigger Values for monitoring wells 40 and 51 are established to alert management that Tritium or Strontium-90 contaminants may be migrating towards

off-site properties at levels that potentially could impact the current dose assessment. If these Trigger levels are exceeded, management is to be alerted to the need for a higher level of attention and action. Trigger Values have been set such that management will be alerted well before ground water concentrations can reach 25% of the regulatory limit at the site boundary. Trigger Values are:

Tritium: 5,000 pCi/L
Strontium-90: 2 pCi/L

In the event that Trigger Values are exceeded, IPEC GW Project Management will take the following actions:

- Verify the validity of the analytical result by recounting the sample or re-sampling the well.
- If the result is verified write a Condition Report (CR), and
- Notify NRC and State by next day close of business, and offer split sample opportunity, and
- Notify Stakeholders by next day close of business
- Sample other potentially affected monitoring wells and consider need to add additional analytes
- Consider need for additional hydro-geological assessments to evaluate the of validity of hydro-geological model
- Evaluate validity of REMP sampling protocols and revise as required
- Evaluate and consider revision of site ground water dose assessment model
- If indicated by revision of the dose assessment model, initiate incorporation of revised doses into annual RETS report
- Evaluate and consider need to initiate ground water remediation based upon dose assessment model results

River Front Boundary Monitoring Wells

Sampling of these monitoring wells, which are MW-38, 48, 60, 61, 62 and 63, is conducted on a periodic basis to monitor for indications of a change in the nature and extent of known contaminant migration into the Hudson River. Samples from these are routinely analyzed for Tritium, Strontium-90 and gamma emitting radionuclide concentrations.

Tritium and Sr-90 Investigation Levels for these monitoring wells have been established, which if exceeded will cause management to be alerted that increased Tritium or Strontium-90 concentrations may be migrating into the Hudson River. The Investigation levels are:

Tritium: 5000 pCi/L

Strontium-90: 2 pCi/L

In the event that Investigation levels are exceeded, IPEC GW Project Management will take the following actions:

- Verify the validity of the analytical result by recounting the sample or re-sampling the well.
- If the result is verified write a Condition Report (CR), and
- Notify NRC and State, and offer split- sample opportunity, and
- Notify Stakeholders via normal status update process.
- Consider sampling other potentially affected monitoring wells
- Evaluate the need for a more frequent sampling regimen
- Evaluate need to sample water or sediment from Hudson River
- Evaluate potential causative effects from plant discharges
- Other actions as deemed appropriate by knowledgeable experts

Trigger Values for the river front monitoring wells are established to alert management that Tritium or Strontium-90 contaminants may be migrating into the Hudson River at levels that could have a potential for impacting dose assessments. If these Trigger levels are exceeded, management is to be alerted to the need for a higher level of attention and action. Trigger Values have been set such that management will be alerted well before ground water concentrations can reach 50% of the regulatory limit (for drinking water) before they reach the Hudson River, where they would be diluted to very low levels, but could exceed existing dose assessments. Trigger Values are:

Tritium: 10,000 pCi/L
Strontium-90: 4 pCi/L

In the event that Trigger Values are exceeded, IPEC GW Project Management will take the following actions:

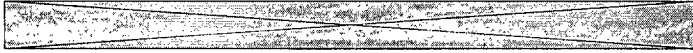
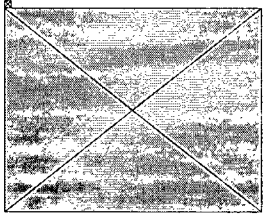
- Verify the validity of the analytical result by recounting the sample or re-sampling the well.
- If the result is verified write a Condition Report (CR), and
- Notify NRC and State by next day close of business, and offer split sample opportunity, and
- Notify Stakeholders by next day close of business
- Sample other potentially affected monitoring wells and consider need to add additional analytes
- Consider need for additional hydro-geological assessments and evaluation /

- revision of validity of hydro-geological model
- Evaluate validity of REMP sampling protocols and revise as required
- Evaluate and consider revision of dose assessment model
- If indicated by revision of the dose assessment model; initiate incorporation of revised doses into annual RETS report
- Evaluate and consider need to initiate ground water remediation based on dose assessment model results

Indicator Monitoring Wells

Indicator monitoring wells, are those wells (to be) selected from ground water investigation project for long-term monitoring within known plumes of ground water contamination. This monitoring will be used for two principle purposes; (1) to identify trends that are indicative of potential adverse changes to the nature and extent of on-site ground water plumes, and (2) to monitor the progress and efficacy of ground water remediation, if conducted. Indicator monitoring well sampling will be conducted on a periodic basis over the life-time of IPEC. Samples from these will be routinely analyzed for Tritium, Strontium-90 and gamma emitting radionuclide concentrations. Management actions, as described for the boundary and river monitoring wells, will be initiated for the following types of conditions:

- Long-term regional concentration trends indicating overall increasing ground water contaminant concentrations
- Expansion of ground water contaminants into previously uncontaminated regions
- Identification of previously undetected contaminants
- Indications that new sources of contaminants may be contributing to ground water contamination
- Indications that contaminant migration has changed from predicted direction or rate of travel



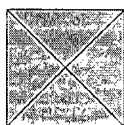
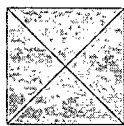
▪ RadNet, formerly Environmental Radiation Ambient Monitoring System (ERAMS) ☒



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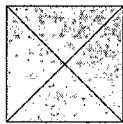
Query Results

Location: **EPA Region 02**
 Medium: **SURFACE WATER**
 Nuclides/Radiation: **Tritium**
 Units: **Traditional**
 Year Date Range : **1960 - 2006**

Note: Before September 1995, tritium results were calculated manually and rounded to the nearest 100 pCi/L (or 0.1 nCi/L). Tritium results less than 100 pCi/L were recorded as 100 pCi/L. Since September 1995 computer software has been used for the calculation and all results have been recorded as obtained. The pre-1995 practice created a positive bias in the measured tritium concentrations, which is clearly visible in graphs.

The following results are based on the temporal changes in radiation level or radionuclides concentration over a specific date range for a specified location and medium, or the nationwide distribution radiation level, or nuclide concentration for a specified date and medium.

Location Average vs. Overall Average Results or

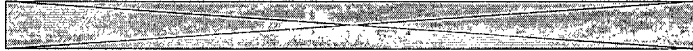
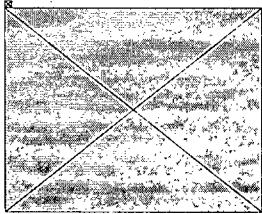


<u>Location</u>	<u>Medium</u>	<u>Sample Date</u>	<u>Procedure Name</u>	<u>Nuclides/Radiation</u>	<u>Result</u>	<u>Combined Standard</u>
<u>Uncertainty</u>	<u>MDC</u>	<u>Unit</u>				
BAYSIDE, NJ						
Delaware River	SURFACE WATER	24-OCT-78	Tritium	Tritium	300	100 --- pCi/L
BAYSIDE, NJ						
Delaware River	SURFACE WATER	10-JAN-79	Tritium	Tritium	300	100 --- pCi/L

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Query Results

Location: **EPA Region 02**
 Medium: **PRECIPITATION**
 Nuclides/Radiation: **Tritium**
 Units: **Traditional**
 Year Date Range : **1960 - 2006**

Note: Before September 1995, tritium results were calculated manually and rounded to the nearest 100 pCi/L (or 0.1 nCi/L). Tritium results less than 100 pCi/L were recorded as 100 pCi/L. Since September 1995 computer software has been used for the calculation and all results have been recorded as obtained. The pre-1995 practice created a positive bias in the measured tritium concentrations, which is clearly visible in graphs.

The following results are based on the temporal changes in radiation level or radionuclides concentration over a specific date range for a specified location and medium, or the nationwide distribution radiation level, or nuclide concentration for a specified date and medium.

Location Average vs. Overall Average Results or

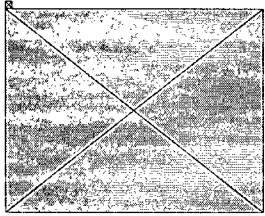


<u>Location</u>	<u>Medium</u>	<u>Sample Date</u>	<u>Procedure Name</u>	<u>Nuclides/Radiation</u>	<u>Result</u>	<u>Combined Standard</u>
<u>Uncertainty</u>	<u>MDC</u>	<u>Unit</u>				
ALBANY, NY	PRECIPITATION	15-DEC-83	Tritium	Tritium	200	100 --- pCi/L
ALBANY, NY	PRECIPITATION	15-JAN-84	Tritium	Tritium	300	100 -- pCi/L
ALBANY, NY	PRECIPITATION	15-FEB-84	Tritium	Tritium	100	100 --- pCi/L
ALBANY, NY	PRECIPITATION	15-MAR-84	Tritium	Tritium	300	100 --- pCi/L

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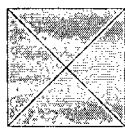
▣ RadNet, formerly Environmental Radiation Ambient Monitoring System (ERAMS) ▣



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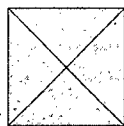
Query Results

Location: **EPA Region 02**
 Medium: **DRINKING WATER**
 Nuclides/Radiation: **Tritium**
 Units: **Traditional**
 Year Date Range : **1960 - 2006**

Note: Before September 1995, tritium results were calculated manually and rounded to the nearest 100 pCi/L (or 0.1 nCi/L). Tritium results less than 100 pCi/L were recorded as 100 pCi/L. Since September 1995 computer software has been used for the calculation and all results have been recorded as obtained. The pre-1995 practice created a positive bias in the measured tritium concentrations, which is clearly visible in graphs.

The following results are based on the temporal changes in radiation level or radionuclides concentration over a specific date range for a specified location and medium, or the nationwide distribution radiation level, or nuclide concentration for a specified date and medium.

Location Average vs. Overall Average Results or



<u>Location</u>	<u>Medium</u>	<u>Sample Date</u>	<u>Procedure Name</u>	<u>Nuclides/Radiation</u>	<u>Result</u>	<u>Combined Standard</u>
ALBANY, NY	DRINKING WATER	02-JAN-79	Tritium	Tritium	400	100 --- pCi/L
ALBANY, NY	DRINKING WATER	04-APR-79	Tritium	Tritium	300	100 --- pCi/L
ALBANY, NY	DRINKING WATER	03-JUL-79	Tritium	Tritium	200	100 --- pCi/L
ALBANY, NY	DRINKING WATER	04-OCT-79	Tritium	Tritium	300	100 --- pCi/L

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