

From: Peter Habighorst *EDD*  
To: Anne Boland *Bill*  
Date: 12/30/05 8:29AM  
Subject: Re: Braidwood Info

*release*  
*Exemption 5*

Thanks Anne,  
One question that Bill K asked this morning....The state of Illinois has provided examples of violations on what appears to be monitoring wells owned by Exelon and within the OCA (VB-3-4, VB-3-3, VB-3-2, VB-3-6, and RW-2). All of these monitoring wells had greater than EPA limit of 20,000 pci/L.



Please give me a call when you get a chance..thanks

>>> Anne Boland 12/29/05 4:06 PM >>> *Bill*  
Per our discussion - the attached should provide you the additional information that you requested. Please recognize that some of it is very preliminary regarding the 1998/2000 spills and the inspection staff will pursue the historical actions in further detail during upcoming inspections.

We also incorporated the new Q&A in the comm plan which should be out shortly.

Let us know if you have any questions.

Anne T. Boland, Deputy Director  
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NRC Region III  
630-829-9701

*mc*

CC: Benny Jose; Geoffrey Grant; James Caldwell; Mark Wilk; Richard Skokowski;  
Stephen Klementowicz; Steven West

Information in this record was deleted  
in accordance with the Freedom of Information  
Act, exemptions 5  
FOIA- 2006-115

*R-36*

### Additional Braidwood Background Information

The liquid effluent concentration release limit to the environment for tritium (Part 20, Appendix B) is 1,000,000 picocuries/liter. This is the NRC effluent release concentration limit. The NRC has a dose limit to the public of 100 millirem per year. It would require drinking 2 liters each day (about 730 liters per year) of water with a tritium concentration of 1,000,000 picocuries/liter to reach one-half of the NRC dose limit (50 mrem). In addition to the release concentration limit, there are ALARA dose control values contained in the licensee's Technical Specifications that hold the effluent discharges to Appendix I of Part 50 values. Appendix I states that a licensee is to control radioactive effluents ALARA; for liquid effluents (total) this means they have to keep the annual dose to any member of the public within 3 millirem to the total body or 10 millirem to any organ. In addition, the licensee's technical specifications specify that calendar quarter dose limits for liquid effluents are 1.5 millirem total body and 5 millirem to any organ.

The EPA drinking water limit is 20,000 picocuries/Liter. The EPA has determined that this correlates to a radiological exposure of 4 millirem per year.

The highest tritium concentration seen in a property-owner's well was approximately 1500 picocuries per liter. This is much less than the EPA drinking water standard and the dose to an individual consuming this water would be negligible, about 0.3 millirem using the EPA dose-concentration relationship (note - dose model may be different than NRC's).

There have been no health or safety issues identified at this point as a result of the tritium spill.

Background on Braidwood 1998/2000 Spills (Note: The following information should be considered preliminary as it remains subject to further inspection).

1998 Spill: Problem Identification Form written. No evidence of radiological follow up by licensee at that time. During April 2001 soil samples were taken in the vicinity of the failed vacuum breaker. Cobalt-60 and Antimony-125 were identified. No NRC action was taken, the spill was treated as 50.75g documentation for decommissioning purposes. The licensee's response to this spill will be further evaluated during upcoming NRC inspection.

2000 Spill: Licensee sampled water from vacuum breaker vault. Results were negative for tritium and gamma emitting isotopes. The licensee performed a 50.75g characterization of the area. Soil samples from the spill area showed very low levels of a few gamma emitting isotopes in the 1E-6 to 1E-8 microcuries/gram range. A root cause analysis was performed. This was also treated as a 50.75g issue and the NRC took no additional action. This will be reviewed further during upcoming inspection.

Well Sampling: The Radiological Environmental Monitoring Program (REMP) program samples 4 wells which are adjacent to the Kankakee river, east of the plant. Three additional sampling points on the river are the discharge point, and upstream and downstream of the discharge point. There are no sampling wells around the pond (until now). Two of the wells along the Kankakee have shown very small increases of tritium above background (< 500 Picocuries/liter). These wells are downstream from the station discharge point, so one could expect to see some small amounts of tritium in these wells, and this is allowable under the NRC effluent discharge plan.

It would have been reasonable for the licensee to install monitoring wells in the vicinity of the

1998 and 2000 spills and monitor for tritium and other isotopes. However, these were on-site spills so there was no requirement to perform any additional REMP monitoring. Any elevated tritium in water could be attributed to the approved effluent release program.