Update on Tritium Investigation – June 2005

What is tritium?
Tritium is a radioactive form of hydrogen. Chemically, tritium behaves like hydrogen and is found in water molecules in place of hydrogen. For example, a water molecule may exchange one of its hydrogen atoms for a tritium atom, resulting in "tritiated water." Like regular water, tritiated water is colorless and odorless. The chemical symbol for tritium is H3. It is a hydrogen atom with two neutrons and one proton in the nucleus. The half-life of tritium is 12.3 years. Tritium emits a very weak beta particle. The stable end product of tritium is helium, which is not radioactive.

Where does tritium come from?
Tritium comes from both natural and man-made sources. A small amount of tritium is produced naturally by cosmic rays passing through the atmosphere. Tritium is also produced in nuclear facilities and high-energy accelerators. Historically, there were nuclear test reactors at Santa Susana near where the tritium was found.

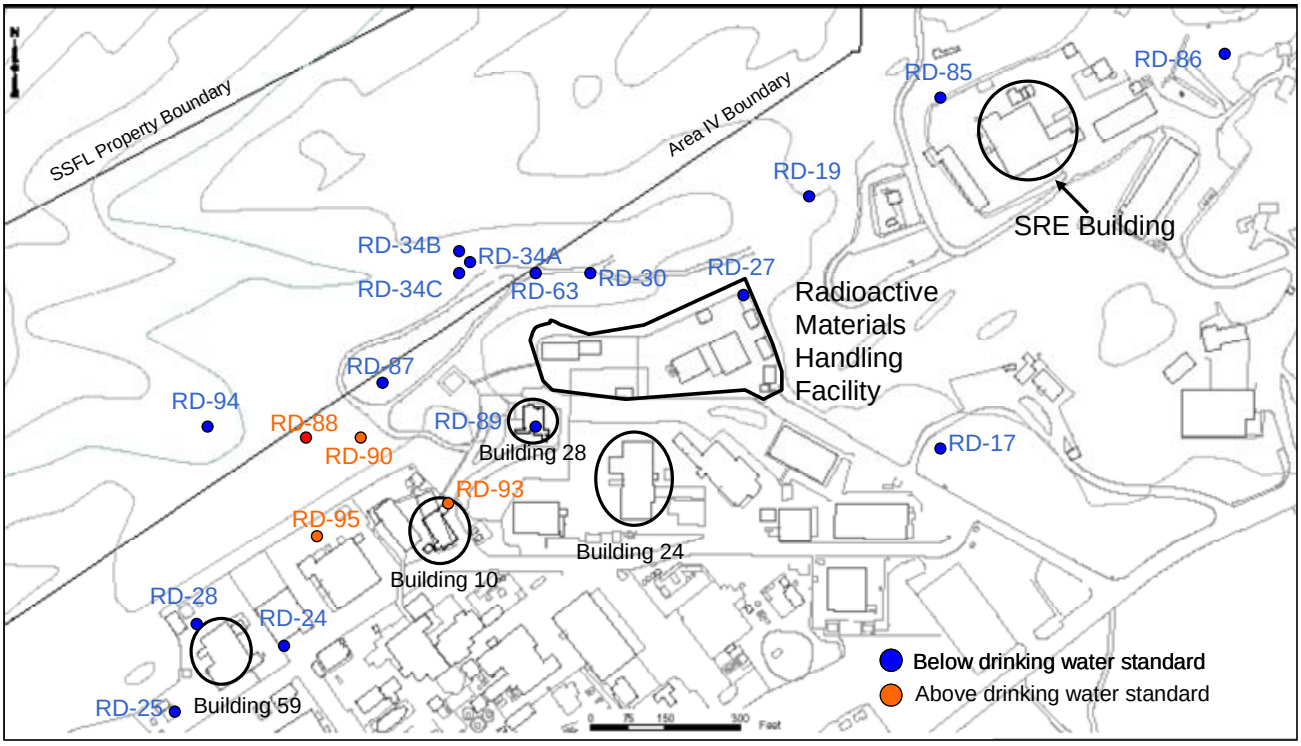
What are the results of tritium analyses in groundwater?
The analysis for tritium is part of the ongoing groundwater monitoring program at SSFL. Over 1000 groundwater samples from 136 locations including both on and off-site wells and springs have been analyzed for tritium. Only 4 wells, all on-site, have shown levels above the drinking water standard of 20,000 pCi/l. Five other on-site wells have shown levels above 1000 pCi/l. The tritium is detected in groundwater that is not used for drinking water purposes.

What else is in the wells?
The groundwater was also analyzed for chemical impacts. At some locations concentrations of organic compounds, typically trichloroethylene (TCE), a degreaser historically used at Santa Susana, are present.

Could I be exposed to the tritium from Area IV?
It is very unlikely. Tritium exposure is most likely to occur when people drink water contaminated with tritium. The groundwater on the site is not used as a source of drinking water, nor will it be in the future.

What are you going to do next?
The results of this latest round of sampling show that we are closer to identifying the source of the tritium and we have a better understanding of the extent of the tritium in groundwater. We will continue to work with the regulatory agencies to place wells and sample in order to further define the source and the extent of the tritium. We will update the community as those results become available.

What are you doing to define the extent of tritium contamination in groundwater?
Boeing and DOE are in the process of conducting additional analyses to more fully characterize site conditions, including the type and extent of radiological impacts on groundwater. In addition to existing wells, we installed three groundwater monitoring wells in March 2004 (see map below). One of the wells (RD-90) had tritium at 80,000 pCi/l. To help identify the source and extent of the tritium we sited eight additional wells. Two wells (RD-85 and RD-86) were drilled in August 2004 near the former Sodium Reactor Experiment (SRE) facility. Two more wells (RD-89 and RD-93) were drilled in May 2005 near Building 28 and Building 10. These facilities had been identified previously as potential sources of tritium. Four additional wells (RD-87, RD-88, RD-94 and RD-95) were drilled nearby to assess the extent of the tritium.



Tritium groundwater sampling

What are the new findings?
Results of groundwater samples from the wells near the SRE building and Building 28 did not detect tritium above the detection limit, making it unlikely that either of these facilities were a significant source of tritium. Preliminary results from well RD-93, near Building 10, indicate tritium at a concentration of approximately 28,000 pCi/l. Another well (RD-95) drilled in May 2005 approximately 250 feet to the west of the Building 10 indicates the presence of tritium in groundwater at a concentration of approximately 117,000 pCi/l. Building 10 is considered to be the most likely source of the tritium. Additional sampling is planned to confirm these results and to monitor changes in concentration over time. Results so far indicate that tritium has not migrated far from the source.

How can I get more information?
For more information, please contact Mike Lopez at the DOE office in Oakland at 510-637-1633, or Majelle Lee at Boeing at 818-586-5283.