



Statement on Tritium

6 February 2006

This statement was prepared for a February 7, 2006 public forum in Godley, Illinois. [\[1\]](#)

The forum concerned the discharge of contaminants into groundwater by a nuclear power plant in Braidwood, Illinois.

Tritium is a highly radioactive [isotope](#) of hydrogen, with a [specific activity](#) of almost 10,000 curies per gram. In gaseous form, it poses far fewer risks than in other chemical forms. Since [tritium](#) has the same chemical properties as hydrogen, it can combine with oxygen to form water. Such tritiated water is radioactive, and has become one of the problem pollutants at many nuclear facilities. In some places it has contaminated groundwater and surface water and continues to do so. One source of such contamination is the Savannah River Site (SRS) in South Carolina, a nuclear weapons site belonging to the US Department of Energy. Commercial nuclear power plants also discharge [tritium](#) into public water bodies.

Since tritiated water is processed by plants, animals and humans like ordinary water, the tritium in it can become transformed into other chemicals, such as proteins, needed by the body. It can become part of the DNA. It can affect developing fetuses. Unfortunately, many of these effects, such as miscarriages in early pregnancy that may be induced by exposure of pregnant women to tritiated water, have not been well studied. Further, the combined effects of in-utero exposure to substances such as tritium combined with endocrine disrupting chemicals such as dioxins or PCBs are also not well understood.

Nuclear power plants discharge a significant amount of tritium as part of their routine operations; sometimes more is discharged as a result of mishaps and incidents. The current drinking water standard for tritium of 20,000 picocuries per liter does not take non-cancer effects of tritium, such as miscarriages, into account. Given the particular properties and non-cancer risks of tritium (when it is organically bound or in the form of tritiated water), I am of the opinion that the Nuclear Regulatory Commission has not been vigilant enough in trying make reactor operators reduce their tritium discharges. It is noteworthy in this context that the surface water standard for tritium in the State of Colorado is 500 picocuries per liter, which is 40 times more stringent than the EPA drinking water standard.

Notes:

1. Based in part on work done in 2004. [? Return](#)