



Containment Chemistry Laboratory

CNL's Containment Chemistry Laboratory (CCL) located at its Chalk River Laboratories (CRL), is a radioisotope lab specializing in the study of post-reactor accident iodine behaviour. Iodine is a hazardous fission product that can be released from reactor fuel damaged during an accident. Studies on iodine chemistry began after the Three Mile Island Accident in 1979, when it became clear that more knowledge about iodine behaviour was needed.

The Containment Chemistry Laboratory staff consists of a group of highly specialized chemists and chemical technologists who have had much experience working with radiolytic processes, iodine and radioactive iodine tracers. In order to detect very small quantities of iodine, Iodine-131 radioactive tracer is used along with sensitive gamma spectrometry equipment. The CCL staff use sensitive gas chromatographs to quantify gas phase species and the lab also contains specialized equipment, such as the iodine adsorption apparatus, which does not exist elsewhere in the world. By design, the lab is adjacent to a Gammacell Co-60 irradiator, which is required for experiments that simulate post-accident radiation fields. In addition to its own instrumentation, the CCL can leverage other facilities at CRL, including the analytical chemistry labs and the surface science labs to perform tests and research.

The Containment Chemistry Laboratory currently studies the adsorption of radioactive iodine from aqueous and gaseous phases onto surfaces that are present in reactor containment buildings, such as steel, aluminum and paint. Iodine adsorption rates are needed for computer codes that predict the amount of iodine that could potentially escape to the environment after a reactor accident.

In addition to partnerships with the CANDU Owners Group, CNL's experience and specialized laboratory has facilitated a contract with the Nuclear Energy Agency of the Organization for Economic Co-operation and Development (OECD), which is made up of members from throughout the world.

