

John White - News Article-

J. White (21)
From: "Mayer, Donald M" <dmayer1@entergy.com>
To: <jrw1@nrc.gov>
Date: 03/23/2007 3:23 PM
Subject: News Article-

John- as I discussed on Friday 3/23/07--- The below article from the Seattle Times may garner some interest.

I want to followup with Chris English on the accuracy of my summary info below (*italics*) relative to DOE at Hanford and BNL. I will let you know when I get the confirmation. But I do know we have the material I discuss below and we did research this topic last year.

Don Mayer

Earlier last year (when we identified the Sr issue in the ground water) I had Chris English look into DOE work for "OE" and we learned they were experimenting with a possible barrier approach as described below. This is something we were and are watching. This article indicates they have found a way to inject via wells and the barrier option may be viable.... We will follow-up. I fully expect to be asked about this by stakeholders. We have a bedrock situation and they have I believe a sandy loam type soil - we will need our hydrologists to check this out for us. Of course the relative amounts of Sr between IP and Hanford are I believe orders of magnitude different and this technology may not be warranted or viable for us. However we of course need to be able to respond to and consider all options.

Additionally, during our DOE research we also found that Brookhaven is using a Strontium specific removal media as part of their ground water pump and treat program, called Clinoptilolite. We purchased some last year for testing. We would utilize this to improve pump and treat removal efficiency for Strontium if we decided to go in this direction. We have not done the testing yet - this is part of our contingency planning in the event we decide to pump and treat for the Sr which at present we don't believe is necessary (because of our ongoing remedial efforts --- pool demin and U1 fuel removal plan). I don't recall if the BNL material is the same as the Hanford material discussed below (- I will get this answer).

From: dauerl@mskcc.org [mailto:dauerl@mskcc.org]
Sent: Friday, March 23, 2007 9:50 AM
To: Mayer, Donald M
Cc: dquinn@daq-inc.com
Subject: Strontium Fixative

The Seattle Times

 seattletimes.com

Friday, March 23, 2007 - 12:00 AM

Permission to reprint or copy this article or photo, other than personal use, must be obtained from The Seattle Times. Call 206-464-3113 or e-mail resale@seattletimes.com with your request.

B/63


Chemical might keep radiation out of river

By The Associated Press

RICHLAND — Hanford nuclear reservation scientists will soon begin using a substance found in bones and teeth to stop radioactive contamination from reaching the Columbia River.

After seven years of studies and successful tests last year, workers this spring will begin injecting calcium phosphate into the ground to prevent radioactive strontium from a defunct reactor from seeping into the river, state and federal officials said.

Calcium phosphate is in bones and teeth. It binds to strontium and forms a crystal that holds the radioactive element in place until the radioactivity naturally decays.

"It should keep it bound up for hundreds of years while the strontium decays away," said John Fruchter, Pacific Northwest National Laboratory program manager for the project.

Within 90 years, about 90 percent of the radioactivity is gone, and within 270 years, radioactivity is within drinking water standards.

Plans are to inject a 300-foot-long chemical barrier about 40 feet underground near the banks of the river where groundwater is contaminated with strontium.

When the N Reactor was operating to produce electricity and plutonium for the nation's nuclear-weapons program, water used to cool the reactor was contaminated with strontium.

Contamination remains in the soil between the reactor and the river and is carried by groundwater.

Radioactive strontium is particularly dangerous to humans. Chemically similar to calcium, it is deposited in the bones, where it can release radiation for years.

Strontium's similarity to calcium offered a promising cleanup solution, but only after scientists figured out a way to inject the chemical into the earth through wells without the phosphate and calcium binding up.

If the chemicals were combined in solution, they would bind up in the pipe rather than spreading out each of 10 wells along the river, said geologist Mike Thompson.

Instead, the calcium is mixed with citrate, which prevents it from binding with the phosphate immediately. Copyright © 2007 The Seattle Times Company