

June 1, 2005

MEMORANDUM TO: Robert A. Nelson, Chief
Uranium Processing Section
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

FROM: Michael G. Raddatz, Senior Project Manager **/RA/**
Uranium Processing Section
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

SUBJECT: REPORT OF MEETING WITH WATER REMEDIATION TECHNOLOGY,
LLC (WRT) ON MAY 19, 2005

Attached for your information is a report of the subject meeting.

Attachment: Meeting Report

cc: Meeting Attendees

MEETING REPORT

DATE: May 19, 2005

TIME: 12:00 - 1:30 p.m.

PLACE: Dinwiddie County Water Authority
Fox Run, VA

PURPOSE: To view the treatment equipment owned by Water Remediation Technology, LLC, (WRT) that is being used by the Authority to remove uranium from the Authority's drinking water supply and understand the equipment's operation and operating environment.

ATTENDEES:	<u>NRC</u>	<u>WRT</u>
	R. Nelson, FCSS	Dwayne Bollig
	M. Raddatz, FCSS	D. Horner
	G. Comfort, IMNS	R. Zahow
	M. Higgins, OGC	

BACKGROUND:

In December of 2000, the U.S. Environmental Protection Agency (EPA) published its Final Rule for radionuclides in drinking water under the Safe Drinking Water Act (SDWA). The Final Rule included maximum contaminant levels (MCLs) for multiple classes of radionuclides, including uranium. For uranium, EPA adopted an MCL of 30 µg/L in public drinking water sources. The rule requires that municipalities and other operators of such water sources comply with these new requirements by 2007. Numerous municipalities which utilize groundwater as the public drinking water source in different regions of the United States (e.g., Dinwiddie County Water Authority) already have recognized that they will have to remove uranium from drinking water to meet the new requirements.

The technologies that would be utilized to remove uranium would result in two things: (1) the water treatment facility would be in possession of source material (uranium) exceeding 0.05 percent of the mixture; and (2) the facility may possess greater than 15 lbs of uranium (the limit for a general license in 10 CFR 40.22) in a very short period of time. Therefore, these local water treatment facilities, numbering in the hundreds or possibly thousands, would need a specific license from NRC to possess the uranium, and would have limited options for its disposal.

In response to EPA's new drinking water MCL for uranium, WRT has proposed that it obtain a Part 40 license so it can provide a service to water treatment plants around the country and possibly obviate the need to license the individual water treatment facilities.

DISCUSSION:

On May 19, 2005, NRC staff visited a WRT pilot facility in Fox Run, Virginia. During the visit, the staff made the following observations:

1. The treatment equipment is located near the well head and housed in a wooden shed (approximately 10 ft X 12 ft), built on a concrete slab. The equipment is mounted on a metal skid. The shed and land on which it is built are property of the Authority. The equipment, from inlet flange to outlet flange, is the property of WRT. The shed is locked and normally unattended. No radiological posting is required.
2. The system consists of two ion exchange resin columns connected in series, an outlet filter, and flow meter. Support equipment includes appropriate control valves, pressure release valves, drain and fill valves, and monitoring instrumentation. Except for periodic sampling and resin replacement, no operator action is required. The equipment has been operating since November 2004. This is a stand-alone unit. Chlorination and any other treatment occurs at a separate location after the uranium is removed. WRT stated that this arrangement is typical.
3. The system's flow rate is 80 gpm when the pump is operating due to service demand (i.e., flow is intermittent; on - 80 gpm; off - zero gpm). The inlet concentration of uranium is nominally 80 ppb; the outlet concentration is < 1 ppb. WRT stated that the dose rate on contact of a fully loaded resin column is 0.2 - 0.3 mrem/hr. A dosimeter was observed, affixed to the upstream resin tank. Based upon calculations, WRT expected operators to receive less than 1 mrem/yr under normal practices.
4. Assuming continuous flow (365/7/24), the system would accumulate approximately 28 pounds of uranium per year and approximately 195 days of such operation would be required to accumulate 15 pounds. [Post-trip calculations.] Because the system does not run continuously, the system operates under the general license provisions of Part 40 (i.e., a specific license is not required). WRT estimates that, under current conditions, it would take 1-1/2 years to reach the 15 pound limit.
5. When the resin in the upstream tank is fully loaded, WRT staff will remove the resin from the upstream tank using temporary piping and installed connections. The resin from the downstream tank will be transferred to the upstream tank and fresh resin will be loaded into the downstream tank. WRT is exploring two options for dispositioning the pregnant resin: (1) disposal at Envirocare, the default option; and (2) regeneration of the resin by a licensed uranium mill. Under the second option, the resin would be regenerated under the mill's Part 40 license using equipment supplied by WRT. The uranium would become the property of the mill and the regenerated resin would be returned to WRT for reuse.
6. We informed WRT that our preliminary determination is that, although we could issue a service provider license to WRT, this would not obviate the need for a license by the water treatment facility because it will possess the uranium regardless of who owns the equipment used to collect the uranium. A lengthy discussion followed regarding this interpretation of "possession." WRT stated that the State of Illinois has taken the opposite interpretation for systems used for radium removal. WRT also countered with an analogy. WRT stated that if WRT leased a site, on the property of the water treatment facility, installed equipment owned

by WRT and operated that equipment by personnel under contract to WRT, that this was no different than if WRT was operating an ISL facility, on land leased from a rancher. The hypothetical rancher would still own the land, but would not be considered in-possession of the uranium coming out of the land. WRT stated that this approach would allow it greater flexibility, and provide a more viable and cost-effective option for licensing for many water treatment operations.

7. When queried concerning the number of water systems that could be impacted, WRT stated that, based on information it has received from EPA, to date, the number is 1000 - 2000. This estimate does not include the State of California. WRT stated that the estimate is up to 1500 impacted systems in that State.

POST-TRIP NOTES:

1. NRC staff met with WRT at an open and announced meeting in Denver, CO, on May 23, 2005, to continue these discussions. The meeting was held in conjunction with the annual National Mining Association/Nuclear Regulatory Commission Uranium Recovery Workshop.
2. WRT has scheduled a meeting with the Chairman on June 21 to discuss WRT's proposed approach (service provider license).
3. WRT plans to submit a service-provider license application on or about July 1, 2005.

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