Approved Minutes of the Technical Advisory Committee Meeting
March 20, 2012

Attendees:	Roger Thompson	David Swift
	Craig Heindel	Rodney Pingree
	John Beauchamp	William Irwin
	Gail Center	Bill Zabiloski
	Claude Chevalier	Peter Boemig
	Mary Clark	Ernest Christianson
	Cindy Parks	Scott Stewart
	Gary Adams	Brian Kelly
	Larry Becker	

Scheduled meetings:

April 17, 2012	1-4 PM	Liquor Control Conference Room-Montpelier

Agenda:

The agenda was reviewed and accepted. Roger noted that there was an update from Ernie on legislative actions included with the agenda and that unless there were specific questions the status of bills would not be further discussed.

Minutes:

The draft minutes of the February 14, 2012 meeting were reviewed and accepted.

Radionuclide Issues:

Gail introduced Dr. William Irwin. Dr. Irwin is the chief of the Radiologic and Toxicological Sciences program in the Environmental Health Division at the Vermont Department of Health. He is a certified health physicist and specializes in radiologic public health safety in the areas of energy – including nuclear and electromagnetic (smart meters), planning for emergencies and the Health Department‘s regulatory oversight of ionizing and nonionizing radiation control.

Dr. Irwin began his presentation by introducing two radiation topics to discuss. The public health goals are to (1) have folks test their drinking water and determine if the water contains radiation (or other contaminants) and (2) prevent human exposure to the radionuclide in question via treatment to remove the radionuclides. Risk management comes into play in the operation and maintenance of the device, the environmental fate of the residuals produced to the public, and any risk to public health from the residuals.

The type of radiation must be considered. For example alpha radiation has little penetrating power and is usually not a hazard outside the body. Inside the body, the alpha radiation can do harm as it tends to not migrate and therefore the dose is confined to a small area. An example of this is radioactive radon gas which is an inhalation concern as the alpha radiation particles (and the subsequent degradation products) get trapped in your lungs as you breathe. Drinking water concerns revolve around uranium and its daughter radium. Uranium, although radioactive, is regulated by EPA as a chemical toxin to the kidney system. Total Radium is regulated for its radioactivity concentrations (pCi/liter, both alpha and beta) and increases risk for bone cancer. Many metals have radioactive forms (lead, bismuth, polonium, iodine) but the TAC's focus is on uranium and radium as naturally occurring regulated metals.

Screening for both uranium and radium is via gross alpha screening. Uranium is also tested for as a metal using any of the Laboratory's inorganic screens (both kit C and kit ID). Radium testing may additionally need to be conducted after the screen at a private laboratory if the alpha reading is equal to or above 5 pCi/liter.

In the outdoor environment, it is understood that radionuclides entering the tank and the leaching field will roughly carry the same amount of radiation whether untreated water or treated water with some kind of backwashing device that discharges at set periods into the tank and field. The leachfield study (fate and transport) conducted by UNH demonstrated that the majority of wastewater radionuclides were contained in the disposal area soil or in the tank solids.

Dr. Irwin also spoke on concerns with gamma rays which are penetrating but have much lower ability to harm human tissue than does alpha radiation. Gamma rays often accompany the emission of alpha or beta particles. Lead, a few feet of soil or three feet of concrete (for examples) are needed against gamma radiation. Dr. Irwin's measuring device for monitoring gamma (in Roentgens) was shown to the committee.

Dr. Irwin related that one result learned from the many private wells that do undergo testing at the Health Dept. laboratory is that most VT wells will not have radionuclides above standards. This was substantiated by the DEC regional staff at the meeting. When wells do contain naturally occurring radiation, the goal is to encourage treatment or switching to a known safe source to minimize potential human health risk. The household waste discharge would be best evaluated as a whole in its risk characterization, rather than focusing on naturally occurring radiation as unique.

Members of the TAC also had specific questions about whether the water treatment equipment installed in buildings presents any risk to the occupants of the buildings or to the people doing maintenance on the systems such as replacing the filter media. Dr. Irwin shared that the rule of thumb was that each time one doubles the distance from a "source", the radiation exposure is quartered. If carbon is being used to remove radiation (usually radon) and is not changed out on a schedule, it will continue to accumulate radiation until there is breakthrough, a risk to water consumers and a potential risk to

service providers and occupants. Prevention of these sorts of risks may be offset by education or recommendations to treatment providers and fall into the O&M category. These situations do occur. At the recent EPA symposium in Connecticut on private wells that many members of TAC attended, there was a presentation by Dr. Spayd of New Jersey DEP who used his gamma monitoring device to demonstrate accumulation of radiation in a water treatment media tank. There is also a researcher/consultant in Maine that John Beauchamp has been in contact with whose specialty is radionuclide treatment and disposal options.

NH's publication which was sent out to TAC by Ernie on 2/23 has many good suggestions tailored to public water operators which would be somewhat applicable to private treatment suppliers. NH has not developed policies for regulating radiation associated with water treatment processes.

Cindy said she had reviewed a recent Colorado study on radionuclide treatment and disposal issues for 30 subsurface disposal systems and will send a hyper-link to the report. She also noted that small community systems are looking at using underground injection systems for their backwash.

The discussion will continue in future TAC meetings to develop a sensible approach to resolve issues associated with disposal of backwash or other waste products.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Water Supply Rule update **high**
6. Seasonal High Water Table determination for performance based systems **high**
7. Wastewater Strength

Executive Committee

Steve Revell, Ernest Christianson, Roger Thompson
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology –

Craig Heindel, Bill Zabiloski, Mark Bannon, Scott Stewart, and Steve Revell.

Overshadowing of Isolation Distance Issues –

Anne Whiteley, Ernie Christianson, Roger Thompson, John Beauchamp,

Gail Center, Chris Thompson

UIC Rules and Geothermal Wells -

Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Scott Stewart, Rodney Pingree, Kim Greenwood, Cindy Parks

SHWT Monitoring –

Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill Zabiloski, Dan Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –

John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center, Cindy Parks

Wastewater Strength -

Mary Clark, Cindy Parks, Peter Boemig, Bill Zabiloski, Roger Thompson, John Akielaszek,