MINUTES
PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
LOW-LEVEL WASTE ADVISORY COMMITTEE (LLWAC) MEETING

October 5, 2012

Attendance

LLWAC Members and Alternates

Michael Akins (Vice-Chair), Worley Parsons
Edward Black, PA State Association of Township Commissioners
Eric Boeldt, Pennsylvania State University
Kevin Bohner, University of Pittsburgh
Holly Fishel, PA State Association of Township Supervisors
Richard Fox, PA State Senate
Charlotte Glauser, League of Women Voters
Ernie Hanna, GZA GeoEnvironmental
Marjorie Hughes, PA Citizens Advisory Counsel (CAC)
Ed Kohler, PA Society of Professional Engineers
William Ponticello, PA Council of Professional Geologists
Jeff Schmidt, PA Chapter of Sierra Club
Katherine Shelly (Chairperson), PA Farm Bureau
Chase Schaszberger, PA House of Representatives
Kathleen Woomert, PA Medical Society

Department of Environmental Protection (DEP) Staff

David Allard, Bureau of Radiation Protection (BRP)
Rich Janati, BRP
Jim Barnhart, BRP
Curtis Sullivan, Bureau of Regulatory Counsel
Robert Altenburg, Policy Office
Amanda Jacquette, Southcentral Regional Counsel
Cheryl Miller, BRP

Others

Carole Rubley, League of Women Voters
Paul Scott, PA House of Representatives
Siobahn O'Dwyer, Exelon Corp.
Tom Mainzer, PA Management Associate (CAC)

Overview of PA DEP Advisory Committees

Mr. Altenburg provided an overview of the DEP's advisory committees. There are approximately 36 advisory committees, and they serve to provide DEP advice from the public and regulated community. DEP seeks input from the advisory committees on all proposed regulations. Additionally, technical guidance documents are shared with the advisory committees for their review and comment before being published in the *Pennsylvania Bulletin*. All advisory committee meeting dates are published and meetings are open to the public in accordance with the Sunshine Act.

Ms. Shelly stated that the LLWAC only deals with low-level radioactive waste (LLRW). She said certain low-level radioactive materials are not considered LLRW and there are other committees within DEP that deal with those materials. Mr. Janati pointed out two other committees: the Radiation Protection Advisory Committee (RPAC) and the Solid Waste Advisory Committee (SWAC). He stated there are times when issues appear to be similar, but they may not be specifically related to LLRW. The purpose of this discussion is to let the LLWAC members know that there are other committees that may be the proper forum to deal with those issues.

Mr. Allard stated that the RPAC is mostly comprised of regulated community representatives advising the BRP on the broad areas that we regulate under the Radiation Protection Act. There are times when radiation protection issues cross over to the waste program and may be issues for consideration by SWAC. After the radiation action plans were promulgated in the solid waste regulations 13 years ago, some waste facilities experienced increased alarm hits from patient waste, etc. In response, regulatory amendments and guidance were developed to manage the disposal of those materials. BRP continues to assist the Bureau of Waste Management in reviewing radiation monitoring action plans of waste facilities and issues related to Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) disposal. Pennsylvania DEP has probably the most comprehensive program for managing the disposal of radioactive materials in the nation.

Ms. Shelly asked if Naturally Occurring Radioactive Material (NORM) is handled by a different committee and whether the BRP is involved with that committee. Mr. Allard explained that TENORM would be an area of interest to the SWAC, and the BRP advises the solid waste program on TENORM. These issues have been going on for decades, even before these unconventional shale plays started. The northwest corner of the state contains a sandstone formation relatively high in naturally occurring uranium and thorium. The brines that come out have to be treated before being discharged to a stream, so the sludge that comes out of that process becomes TENORM. We built in a provision to the regulations that allows the disposal of TENORM waste in PA municipal waste landfills (RCRA Type D facilities) as long as it does not endanger public health and safety. The public radiation dose limit is 100 millirem (mrem), but we use a standard of 25 mrem, which is similar to the decommissioning standard, and we look at all possible pathways of exposure to radiation for disposal purposes. BRP advises the solid waste program on TENORM, so any TENORM for disposal would come as a special application. The department uses a "Form U" process to review the radioactivity in material

destined for landfill disposal, and we have denied some TENORM disposals based on this information.

Mr. Schmidt asked if the BRP is notified when a radiation alarm goes off at a solid waste facility and the load is not approved. Mr. Allard said that the BRP is notified and it is a matter of the timing of the notification. It is typically a pre-arranged scenario. The Form U is submitted by the landfill to the department and is either approved or denied. If the Form U was preapproved and an alarm goes off, BRP will not be notified immediately. The alarms are to be recorded under the waste facilities' daily records, which are reported to DEP every year.

Mr. Schmidt asked if there had been any materials rejected from any landfills that the BRP knows about, either prior to or since the last LLWAC meeting. Mr. Schmidt clarified this as any materials that may have been generated from drilling activities. Mr. Allard replied that the BRP is aware of a number of rejected loads. One of the criteria relates to the limit set by the Department of Transportation (DOT). Anything over 270 picocuries per gram will be rejected. Mr. Schmidt asked if the BRP knows the disposition of that material, and Mr. Allard answered no. Mr. Schmidt noted there has been documentation about a rejection from an Ohio landfill for materials coming from Pennsylvania. He said the material is waste sand from two Green County wells and not sludge from sewage treatment plants. He asked if BRP was aware of this being waste sand. Mr. Allard replied he was not aware of this.

Mr. Schmidt asked if the BRP could provide information to committee members on all the alarms that were triggered at landfills due to loads of material containing radioactivity from natural gas drilling-related activities. Mr. Allard stated that the DEP's solid waste program might be able to provide that information.

Mr. Janati noted that a considerable amount of time was spent on issues that are unrelated to the LLRW and are outside the scope of the LLWAC. Mr. Janati expressed concern that the department may be perceived as uninformed because these questions are being brought to the wrong committee or department staff for response. Ms. Shelly suggested that instead of answering only that the department is not aware of the situation, the response should also include a qualification that another committee is responsible for that information. Mr. Allard offered to direct these questions to the solid waste program to be addressed.

Eric Boeldt asked why the material, after it arrives at the landfill, would not fall under the hazardous waste regulations and handled in that manner. He acknowledged that this issue should probably be addressed by the solid waste program. He also stated that when a load is rejected, the truck should be placarded as hazardous waste. Mr. Allard agreed to follow up with the waste program on that as well.

Permit Decision Guarantee

Mr. Altenburg provided an overview of the Permit Review Process and Permit Decision Guarantee (PDG). The Governor has issued an Executive Order directing the PDG Program. The main reason for this Executive Order is that the existing permit process takes too long. The DEP Secretary looked at the reasons for the delays in permit processing and found the major

cause was that the regulated community submitted incomplete applications to DEP. Prior to the PDG Program, DEP rarely rejected an incomplete application. The reviewer would go back to the applicant and go through the entire process with them. This created so much back and forth between the DEP and the applicant that it caused significant time delays. This new program is very clear on the requirements for applications, and if applications submitted to DEP are incomplete, they will be rejected. When a complete application is received, timeframes will be established for the reviews. The DEP website contains more information on this program. There are webinars where this is discussed, as well as frequently asked questions and technical guidance to facilitate timely implementation of this program. The public comment period just closed and DEP has received over 60 comments. Mr. Allard noted that BRP has never had a problem with timeliness. He said that the RPAC has complimented BRP on our turnaround time with licenses and registrations, especially since we became an NRC Agreement State in 2008 and took over many more licenses.

Committee Business

Election of Officers

The LLWAC members voted to elect Katherine Shelly as Chairperson and Michael Akins as Vice-Chairperson for an additional year.

Approval of the Meeting Minutes

The LLWAC members voted unanimously to approve the minutes of the October 6, 2011, annual meeting.

Proposed Revision to the Bylaws

The changes involve Article IV (Membership). The existing language reads "the constituent organizations shall reconfirm their members by letter in December of each presidential election year, beginning in December 2004, for consideration by the Secretary by April 1 of the following year." The new language reads "at the discretion of the Secretary and upon written notification from the department within one year following each gubernatorial election, the constituent organization shall reconfirm their members in writing either by letter or e-mail."

Mr. Janati stated that the new language changes the "presidential" election to "gubernatorial" election, as this seems more appropriate for this committee. Mr. Schmidt asked if this means we do not have to go through a reconfirmation process unless the Secretary elects to do so. Mr. Janati affirmed this point, and no actions need to be taken. He also clarified that there are no changes to the current process for nomination and approval of the committee members. Ms. Shelly stated that within the first year after the gubernatorial election, the Secretary could ask that all members and alternate members be reconfirmed. If he chooses not to, there is no reconfirmation process until the next gubernatorial election.

There was no further discussion, and the LLWAC members voted unanimously to approve the revision to the bylaws.

Next Annual Meeting

The committee decided to hold the next meeting on October 4, 2013, with an alternate date of September 27, 2013.

Status of Commercial LLRW Disposal Facilities and Recent Developments

Mr. Janati provided an overview of LLRW classification and the formation of the regional compacts.

Mr. Janati stated that there are currently four commercial LLRW disposal facilities in the United States. These facilities are Barnwell in South Carolina, the Energy*Solutions* facility in Utah, Richland in Washington and the new Waste Control Specialists (WCS) facility in Texas.

1. The Barnwell facility accepts all classes of LLRW from the three members of the Atlantic Compact (Connecticut, New Jersey and South Carolina). As of July 1, 2008, this facility no longer accepts LLRW from outside the Atlantic Compact.

2. The Energy*Solutions* Clive facility accepts Class A waste from all states except those in the Northwest and Rocky Mountain Compacts. This facility is not a regional facility, and it is regulated by the State of Utah. In April of 2012, the State of Utah approved a variance request for the disposal of Class A sealed sources at this facility. The variance will have a term of one year from the date the first shipment is received at the Clive facility and will be partially funded by the Conference of Radiation Control Program Directors (CRCPD). Only Class A sealed sources recovered as part of a round-up coordinated by the CRCPD Source Collection and Threat Reduction (SCATR) Program are authorized for disposal at the Clive facility. The disposal of sealed sources will be limited to Class A waste, and the half-lives of the isotopes in the sources to be disposed of should be equal to the half-life of Cs-137 or less. Mr. Janati stated that each source must be registered with the Off-Site Source Recovery Project (OSRP) before it can be accepted for disposal. A list of the sealed sources that the licensees have registered with OSRP will be sent to an authorized broker. Licensees will then be contacted by a broker to schedule a date and time for collection of their sources.

3. The Richland facility is a regional facility and accepts all classes of LLRW, but only from the member states of the Northwest and Rocky Mountain Compacts. This facility continues to accept radium sources from the Appalachian Compact and other states and compacts.

4. WCS Disposal facility is a regional facility for the Texas Compact (Texas and Vermont) and accepts all classes of LLRW from both commercial and federal facilities. Construction of this facility began in January 2011. In April 2012, the Texas Commission on Environmental Quality (TCEQ) authorized WCS to accept waste and begin disposal activity including collection and disposal of sealed sources. Additionally, the Texas Compact Commission (TCC) has established rules for the importation and exportation of LLRW into and out of the Texas region. The generators outside the Texas Compact must secure a contract with WCS,

obtain a Generator Certification, file an import petition with the TCC and receive approval prior to disposal of waste at the facility. The generators must also obtain certification for transport from the State of Texas. Mr. Janati stated that the current facility license limits disposal of out-of-region waste to a maximum of 30 percent of the total facility volume and radioactivity. Also, LLRW from international origin will not be accepted for disposal at the WCS facility. The facility is a near-surface disposal facility and its license requires that LLRW containers be placed inside a concrete over-pack for additional protection.

Mr. Boeldt stated that the paperwork involved with transportation certification is very time consuming. Mr. Bohner expressed concern that the amount of paperwork involved for obtaining access to the WCS facility has made the process very difficult for small generators such as hospitals and universities. He asked if there are any efforts underway to facilitate disposal access at the WCS facility for small generators. Mr. Janati stated that he had raised this issue with the representatives from the TCC at a previous meeting of the Low-Level Waste Forum (LLW Forum). He said that he will raise this issue again at the upcoming Forum meeting in Chicago. Mr. Janati pointed out that the TCC defines "small generator" as a generator of LLRW that generates no more than 100 ft^3 of waste annually.

In the event of the need to restart the siting process for a LLRW disposal facility in Pennsylvania, Mr. Fox asked if the department would use the same process it used several years ago. Mr. Janati replied that when the decision was made to suspend the siting process, the department, through its LLRW disposal facility developer (Chem-Nuclear Systems), prepared a "lessons learned" document. He said that the department would consider lessons learned and recommendations contained in this document should there be a need to restart the siting project. This could potentially result in changes to the previous siting process, as long as the changes do not compromise health and safety of the public. Ms. Glauser stated that when the siting process started in the early 1990's, Pennsylvania was generating considerably larger amounts of LLRW than it is generating now. Mr. Schmidt asked if the department had established a timeline for the restart of the siting process. Mr. Janati replied that the department did not commit to a timeline for the restart. He said the department would consider a restart of the siting process if the need arises. Mr. Schmidt asked if the department could share the lessons learned document with the committee. Mr. Janati committed to mailing a copy of the document to the committee members.

Update on NRC Low-Level Waste Program Activities

Mr. Janati provided an overview of the recent NRC Low-Level Waste Program activities as follows:

- Large-Scale Blending of Waste - In March 2011, the NRC issued guidance for reviewing large-scale blending of LLRW. This guidance should assist the NRC staff and Agreement States in making informed decisions regarding large-scale blending applications or requests from licensees. Mr. Janati stated that the concept of blending waste was discussed extensively at the previous meetings of the LLWAC.

- Storage of LLRW - In August 2011, the NRC issued a Regulatory Issue Summary

(RIS 2011-09) associated with extended storage of LLRW to provide licensees with a consolidated list of available resources that will assist with the extended storage of LLRW. The RIS also provides a summary of the type of information contained in the listed resources.

- Volume Reduction Policy Statement - In May 2012, the NRC issued a revised Policy Statement on Volume Reduction Policy. The NRC recognizes that volume reduction is only one aspect of an effective program for managing LLRW. The revised policy statement encourages licensees to also consider other factors such as operational efficiency, reductions in occupational exposures, security, and cost in deciding how to best manage LLRW.

- Branch Technical Position (BTP) on Concentration Averaging - In June 2012, the NRC issued the revised BTP for public comment. One of the key revisions includes the NRC Commission's new position on blending of waste. The BTP serves as a guidance and contains acceptable methods for classifying various waste streams or mixtures of these waste streams for disposal in accordance with the NRC LLRW regulations in 10 CFR Part 61 (Licensing Requirements for Land Disposal of LLRW).

- 10 CFR Part 61 Rulemaking - In January 2012, the NRC Commission approved expanding the current limited-scope revision to Part 61 regarding site-specific analysis to bring a clearer risk-informed approach to Part 61. The NRC staff is currently evaluating the issues associated with revising Part 61 and is seeking input from various stakeholders. In summary, the specific revisions to Part 61 are as follows:

  1. Allowing licensees the flexibility to use ICRP (International Commission on Radiological Protection) methodologies in a site-specific performance assessment for the disposal of all radioactive waste.

  2. A two-tiered approach that establishes a compliance period that covers the reasonably foreseeable future and a longer period of performance to evaluate the performance of the site over longer timeframes.

  3. Flexibility for disposal facilities to establish site-specific waste acceptance criteria based on the results of the site's performance assessment and intruder assessment.

  4. A compatibility category for the elements of the revised rule to ensure alignment between states and federal government on safety fundamentals, while providing the states with the flexibility to determine how to implement these safety requirements.

  The NRC staff has been asked to provide an extended proposed rule to the Commission within 18 months of the publication of the Staff Requirements Memorandum (SRM), dated January 19, 2012.

  Mr. Janati provided a discussion of Part 61, Subpart C requirements for land disposal of LLRW, specifically protection of the general population, protection of individuals

from inadvertent intrusion, protection of individuals during operations, and stability of the disposal site after closure. Mr. Janati stated that the NRC is considering a rulemaking to revise Part 61 for several reasons including the emergence of potential waste streams not considered in the original Part 61rulemaking such as large quantities of depleted uranium (DU), DOE's increasing use of commercial LLRW disposal facilities, and extensive international operating experience in the management of waste.

Mr. Boeldt asked if the NRC is going to grandfather the current disposal sites. Mr. Janati replied that the LLW Forum Working Group on Part 61 has made that recommendation, and the NRC could certainly exercise that option. He said that states and compacts are concerned about the potential impact of the proposed rulemaking on the existing LLRW disposal facilities. NRC is currently seeking input from various stakeholders regarding the proposed rulemaking. As it relates to disposal of DU, Mr. Allard stated that the concern is not the radiological properties of the DU, but its chemical properties and associated hazards. Ms. Hughes asked about the department's position on large-scale blending of waste (mixing Class A waste with Class B and C wastes). Mr. Janati replied that the department does not oppose large-scale blending of waste because it provides disposal options for higher concentrations of LLRW (Class B and C wastes) that are currently being stored at various sites. However, the department opposes blending through dilution of LLRW or the mixing of clean with contaminated materials. Mr. Janati emphasized the importance of recordkeeping and tracking of LLRW by commercial facilities involved in large-scale blending and that receive LLRW from several generators for that purpose.

Overview of PA DEP and the Appalachian Compact Commission Recent Activities and Initiatives

Mr. Janati provided an overview of PA DEP and the Appalachian Compact Commission recent activities and initiatives involving LLRW management and disposal as follows:

Large-Scale Blending of Waste - PA DEP provided input and worked closely with the NRC staff on a risk-informed, performance-based blending concept for LLRW.

NRC Working Group on LLRW Storage - PA DEP represented the Organization of Agreement States on the NRC Storage Working Group and the development of the Regulatory Issue Summary on Extended Storage.

NRC Part 61 Rulemaking - PA DEP represented the host state (PA) and the Appalachian Compact Commission on the LLW Forum Working Group and provided extensive comments to the NRC regarding Part 61 revisions.

Availability of WCS Disposal Facility - The Commission provided a bulletin to all LLRW generators in the compact and informed them of the availability of the WCS disposal facility and, specifically, disposal options for Class B and C wastes. The Commission also responded to several inquiries by the generators regarding access to the WCS disposal facility.

TCEQ Request for Assistance - PA DEP provided information and assistance to the TCEQ in support of a characterization study for LLRW to be disposed of at the WCS facility.

Disposal of Sealed Sources - PA DEP provided two separate Information Notices to the PA licensees and LLRW generators on collection and disposal of sealed sources at the Energy*Solutions* facility in Utah and the WCS facility in Texas.

Ms. Glauser inquired about disposal fees for the WCS facility in Texas. Mr. Janati replied that the TCEQ has established interim disposal rates for commercial LLRW waste disposal at the WCS facility. He also said that the rates are considerably higher for disposal of Class B and C wastes.

Information on LLRW Generation and Storage Information for the Appalachian Compact

Mr. Barnhart presented several charts and tables containing information on the LLRW generation in the Appalachian Compact (compact). During calendar year 2011, the compact generated about 167,157.3 cubic feet (ft^3) of Class A LLRW. The total radioactivity of this LLRW was about 495.47 curies (Ci). Pennsylvania disposed of about 155,508.5 ft^3 or 93 percent of waste by volume, most of which was generated by the utility, government and industrial generators. Maryland disposed of about 10,568.7 ft^3 of waste or approximately 6 percent of total volume, most of which was generated by the government category. Delaware and West Virginia generated about 1,061 ft^3 and 19.1 ft^3, respectively.

Mr. Barnhart also provided information on the radioactivity of Class A LLRW generated in the compact. Pennsylvania disposed of about 492.61 Ci or 99 percent of waste by radioactivity, most of which was generated by the nuclear utilities. Maryland generated about 1.84 Ci or 0.40 percent of waste by radioactivity. Delaware and West Virginia generated about 1.0 and 0.02 Ci respectively. All Class A waste generated within the compact was shipped to the Energy*Solutions* disposal facility in Clive, Utah.

Mr. Barnhart said that because of the closure of the Barnwell disposal facility to LLRW generators outside the Atlantic Compact, all Class B and C wastes generated in the Appalachian Compact are currently being stored at various sites. The nuclear utilities generate the majority of Class B and C wastes in the compact. Mr. Allard stated that the department also tracks and reports waste-in-storage for the compact. Mr. Barnhart said that the LLRW storage information will be included in the department's annual report for calendar year 2011, and the report will be available on the department's website.

Mr. Barnhart provided a brief discussion of waste generation trends in the compact for the period of 1992 through 2011. He also presented a chart showing a simple radioactive decay of the 2007 compact waste for the periods of 50, 100, 500 and 1000 years. In 2007, the nuclear utilities made several shipments of Class B and C wastes to the Barnwell disposal facility. The shipments contained very large quantities of radioactivity (curies). Mr. Barnhart stated that the majority of isotopes in the LLRW have relatively short half-lives (less than five years) and decay rapidly. The isotope Cobalt-60 (half-life of about 5.2 years) dominates the radioactivity content of the 2007 compact waste for isotopes with half-lives greater than five years, followed by

tritium (half-life of about 12.3 years) and Nickle-63 (half-life of about 100.1 years). In summary, the isotopes with half-lives greater than five years decayed to about 6 percent of their initial radioactivity after 50 years, 3 percent after 100 years, 0.3 percent after 500 years, and 0.08 percent after 1000 years.

Public Comment

There were no comments or questions raised by non-committee members in attendance.

Adjournment

Ms. Shelly adjourned the meeting at approximately 12:55 pm.