

**NCRP PAC 5 Meeting Minutes**  
**March 9, 2014**  
**Hyatt Regency Hotel**  
**Bethesda, Maryland**

Participants

S.Y. Chen, Mary Clark, Bruce Napier, Carl Paperiello, Chris Whipple, Ruth McBurney, Vincent Holahan, Kathy Kiel, Jill Lipoti, Brian Powell, Kathryn Higley, Larry Chi, John Boice, and James Cassata

Absent

Andrew Wallo, III, Thomas Hinton

Discussion

- S.Y. Chen opened the meeting by welcoming all PAC 5 members and introduced two new members: Katherine Kiel of Holy Cross University and Brian Powell of Clemson University. S.Y. thanked the committee for their active participation in the past year. He urged the committee to continue the effort. An agenda of the meeting is attached.
- President Boice came to the meeting at 10:00 a.m. to address the committee. He thanked the effort made by the committee members and stated the need for the NCRP PAC committees to help identify and develop emerging projects. Specifically, he urged the committee to produce individual white papers once potential topical issues are identified and developed. A briefing session was arranged at 2:30 p.m. for all PACs to communicate the discussions during the day.
- S.Y. Chen stated the specific charge of the Committee this year to begin deliberating on the potential project topics for future work. Thus the Committee was scheduled to continue on discussing the three major topics identified from the 2013 meeting. These are: (1) Radioecology (led by Kathryn Higley), (2) Technologically-Enhanced Naturally Occurring Radioactive Material (TENORM) (led by Ruth McBurney), and (3) Late-Phase Recovery from Nuclear or Radiological Incidents (led by S.Y. Chen). A summary of the topical discussions is provided in Attachment A.
- The meeting adjourned at 2:30 p.m. to join an all PAC briefing, where each PAC presented the topical issues in their respective discussions until 5:00 p.m.

## **Attachment A**

### **Topical Discussions of PAC 5 Committee**

#### **Topic 1: Radioecology**

##### Project Need

The most comprehensive reports published by NCRP (PAC 5) on radioecology and the environment are about 20-30 years old. These are:

1. Report No. 076 - Radiological Assessment: Predicting the Transport, Bioaccumulation, and Uptake by Man of Radionuclides Released to the Environment (1984)
2. Report No. 109 – Effects of Ionizing Radiation on Aquatic Organisms (1991)

The information has since been updated and superseded by advancements in radioecological efforts made across the fields, particularly with the availability of the wealth of data and knowledge gathered and developed since the Chernobyl nuclear accident of 1986. Furthermore, definitive assessment and response to public concerns over specific ecological issues associated with recent Fukushima nuclear accident of 2011 in Japan have not been prompt and comprehensive due to lack of information. In addition, the updated information will support and strengthen regulatory justifications and actions in the protection of the environment.

##### Proposed Initiatives

The proposed initiatives are to update NCRP Report No. 76 and No. 109, respectively.

1. Revise Report No. 76. The purpose of this Report is to review the current status of the application of radionuclide transport models from the point of discharge to the environment to the point of intake by man. The purpose of this Report is to review the current status of the application of radionuclide transport models from the point of discharge to the environment to the point of intake by man. The proposed initiative is to revise the report by incorporating the latest information on radionuclide transport in the past 30 years (such as IAEA TECDOC-1616, Quantification of Radionuclide Transfer in Terrestrial and Aquatic Environments for Radiological Assessments).
2. Revise Report No. 109. The Report reviews the available literature on the effects of ionizing radiation on aquatic organisms, provides guidance for a dose rate below which deleterious effects to aquatic populations are acceptably low and provides a series of simple dosimetric models that can be employed to demonstrate compliance with such a standard. Major efforts have been undertaken in Europe. For example, major radioecological initiatives have been funded by the European Commission and other entities in Europe. The ICRP, in particular, has recommended inclusion of the

environment in the system of protection in its latest recommendation (i.e., Publication 103). The proposed initiative will update the information on radiation effects on aquatic (and including terrestrial) organisms in the U.S.

### Approach and Logistics

White papers will be developed for the proposed initiatives. Potential collaborative efforts will be sought with experts from ICRP and European communities. Likely U.S. sponsors include U.S. Nuclear Regulatory Commission, Environmental Protection Agency, and Department of Energy.

The proposed lead for the initiatives is Kathryn Higley, who will be supported by Thomas Hinton, and consulted by Ward Whicker. Additional members will be solicited from NCRP Council and other experts in the U.S.

## **Topic 2: Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)**

### Project Need

With increased demand for natural resources, the industrial activities in exploration and production have created some human health and environmental concerns over technologically enhanced natural occurring radioactive material (NORM). The Need for review of current practices and radiation issues involved with industrial practices that produce technologically enhanced naturally occurring radioactive material (TENORM). The current regulatory status of TENORM has not been well established or consistent. There is no federal statute specifically designated for regulating the materials. As such, individual states have to cope with the emerging radiological issues of TENORM on the ad hoc basis. This specific need is manifested in recent topic on exploring the extracting (i.e., “fracking”) of natural gases and oil from the Marcellus shale in the U.S., which led to the guidance developed by the Pennsylvania Department of Health. Thus a credible and comprehensive study at a national level is needed to evaluate the overall radiological issues across the U.S.

### Proposed Initiatives

The proposed initiative is for NCRP to develop TENORM guidance for the U.S. The guidance report will include: (1) scope of the radiological issues that includes the industrial technology, source terms and characteristics, and magnitude of the problem, (2) worker and personnel protection, (3) environmental protection, (4) protection of the public health, (4) disposition of equipment and byproduct materials, and (5) disposal of radioactive waste. The proposal will provide an evaluation of the current state of the knowledge on TENORM and the related issues. This will include the evaluation conducted by the National Academy of Sciences, U.S. Environmental Protection Agency, U.S. states regulators (such as represented by the Conference Radiation Control Program Directors, CRCPD), as well as guidance developed by individual states.

### Approach and Logistics

A white paper will be developed on the TENORM initiative. Principle collaborators will be the CRCPD and major industrial organizations (such as American Petroleum Institute). Likely U.S. sponsors include U.S. Nuclear Regulatory Commission, Environmental Protection Agency, and Department of Energy.

The proposed lead for the initiatives is Ruth McBurney, who will be supported by David Allard and other experts in the field. Additional members will be solicited from NCRP Council and other experts in the U.S.

### **TOPIC 3: Late-Phase Recovery from Nuclear or Radiological**

#### Project Need

The lack of national guidance on late-phase recovery had prompted Department of Homeland Security (DHS) to fund the development of the pending NCRP Report No. 175, Decision Making for Late-Phase Recovery from Nuclear or Radiological Incidents. The main issues are to address the aftermath following a major incident from terrorism or nuclear accident such as the events occurring in Chernobyl or Fukushima. While Report No. 175 addresses the general principles and guidance on the response to recovery issues, it also emphasizes on the need to further develop scenario-specific approach to enhance the knowledge and preparedness over long-term recovery given that any late-phase recovery effort will be community based. The lack of guidance and its impact on the overall recovery has been evidenced in the recovery effort undertaken in Japan following the Fukushima nuclear accident. While the U.S. Federal Emergency Management Agency (FEMA) is in the process of developing a national guidance on recovery to major national disasters for all hazards (e.g., National Disaster Recovery Framework), it is important that Report No. 175 will be used as a basis to further the timely development of national guidance to specifically address the radiological issues for long-term recovery.

#### Proposed Initiatives

NCRP Report No. 175 recommends eight major national issues as possible follow-on studies to fill the gaps for late-phase recovery following a major nuclear or radiological incident, be it caused by terrorist incident or nuclear accident. Based on these recommendations, there are three proposed initiatives by NCRP.

1. Develop Scenario-Specific Guidance for Long-Term Recovery. This initiative is to develop guidance to address three distinctive scenario and community settings that could expand the guidance from Report No. 175. These include: (a) a potential terrorist attack on a major metropolitan area (such as New York City or Washington, D.C); (2) a nuclear accident in a rural area (such as a major agricultural area in the Midwest Region in the

U.S.); and (3) a major terrorist attack involving a major waterway or water body in a region (such as in the Great Lake Region) that may affect transportation, drinking water, irrigation, and aquatic foods and ecology. The scenario-specific studies will greatly enhance the knowledge and response to address long-term recovery issues that include such areas such stakeholder outreach and involvement, risk communication, remediation and waste disposal.

2. Compile and Develop Regional Information Database for Long-Term Recovery. One important recommendation of Report No. 175 is to promote continuous learning of lessons gained from past incidents. One important information gap is the site-specific information that is often times unavailable at the time of the response. Compilation of the regional specific information that could include agriculture, building, residence, soil formation, as well as applicable remediation technology, would serve to provide vital information to future recovery response.
3. Evaluation of Technology Need for Long-term Recovery. Report No. 175 has identified technology gaps in remediation of areas impacted by the widespread contamination from a major incident. This initiative will provide a status evaluation of the exiting remediation technology and identifies areas where further research and development will be needed to address expedient long-term recovery.

#### Approach and Logistics

White papers will be developed for the proposed initiative for long-term recovery. Principle collaborators will be federal agencies (DHS, FEMA, EPA, NRC, DOE, USDA, States, major U.S. cities). Likely U.S. sponsors include: DHS, FEMA, EPA, NRC, DOE, States, and major cities.

The proposed lead for the initiatives is S.Y. Chen who serves as chair of Committee SC5-1. He will be supported by other experts from NCRP (including SC5-1 or PAC 5). Additional members will be solicited from NCRP Council and other experts in the U.S.