

## THE R&D LABORATORY WORKING GROUP (RADWG) TEAMS UP ON WASTE MANAGEMENT: SOME HOME RUNS AND BASES ARE LOADED

Patricia A. Harrington  
MAC Technical Services Company

Joel C. Haugen and Raymond E. Lang  
DOE Chicago Operations Office  
Waste Management and Technology Development Division

### ABSTRACT

Formed a little less than two years ago, the R&D Laboratory Working Group (RADWG) has made significant progress in addressing waste management issues affecting DOE R&D laboratories. Comprised of staff from 15 DOE R&D laboratories, with about 100 members actively participating on committees, the RADWG includes laboratory personnel who work in various parts of waste management operations, including waste management, health physics, analytical chemistry, quality assurance and training. These members share their expertise and experience to formulate an integrated approach for improving waste management operations at the laboratories and for working with DOE policy makers to consider and incorporate R&D laboratory waste management concerns into DOE policy and guidance. The RADWG is a unique organization within DOE in that it is not DOE Headquarters directed, and it operates using a field oriented, total quality management approach based on consensus and expert peer review. During the last year, the RADWG has finalized or nearly completed five issue paper or recommended guidance documents in the areas of process knowledge certification of waste, methods for measuring radiological surface contamination, sample preparation and analysis of waste for radiological contamination, and radiological release criteria for waste. The Group has also worked with several DOE and commercial organizations to implement new ideas for making laboratory waste management operations more efficient and cost effective.

### INTRODUCTION

Last year at WM'93, we introduced the Department of Energy (DOE) Research and Development Laboratory Working Group (RADWG), which was formed in the spring of 1992 to address waste management issues unique to research and development (R&D) laboratories (1). The main objectives of the RADWG continue to be to: a) share and exchange waste management related information; b) develop a commonly shared waste assessment program with a core set of standardized and technically defensible waste characterization procedures, criteria and guidance; c) provide peer review of laboratory procedures; and d) assist the smaller laboratories with more limited staff in improving their waste management programs.

The RADWG is composed of staff from 15 DOE R&D laboratories. About 100 members with expertise in waste management, health physics, analytical chemistry, quality assurance and training actively participate on committees. The group was initiated by staff from the DOE Chicago and San Francisco (now Oakland) Operations Offices laboratory systems, and now includes personnel from R&D laboratories around the DOE complex. A few staff from Westinghouse Hanford Company are also part of one committee specifically focused on Hanford disposal issues (Most DOE R&D laboratories ship their radioactive waste to Hanford). Laboratories with active members include:

- Chicago Operations Office
  - Ames Laboratory (IA)
  - Argonne National Laboratory East (IL)
  - Argonne National Laboratory West (ID)
  - Battelle Columbus Laboratories (OH)
  - Brookhaven National Laboratory (NY)
  - Fermi National Accelerator Laboratory (IL)
  - New Brunswick Laboratory (IL)

- Princeton Plasma Physics Laboratory (NJ)
- Oakland Operations Office
  - Lawrence Berkeley Laboratory (CA)
  - Lawrence Livermore Laboratory (CA)
  - Stanford Linear Accelerator Center (CA)
- Albuquerque Operations Office
  - Los Alamos National Laboratory (NM)
  - Inhalation Toxicology Research Institute (NM)
- Richland Operations Office
  - Battelle Pacific Northwest Laboratory (WA)
  - Westinghouse Hanford Company (WA)
- Superconducting Super Collider (TX)

R&D laboratory waste management issues tend to differ from those associated with production facilities and large cleanup sites. R&D activities generally produce a relatively large number of diverse waste streams, most consisting of small quantities. Also, the predictability of the types and quantities of future waste streams is less certain at R&D laboratories because research activities change over the years. RADWG members focus on sharing their experience and expertise along with their common understanding of these unique waste management issues.

Several qualities of the RADWG make this group unique in DOE, and these qualities combined with several key factors have contributed to the RADWG's success to date. The RADWG is unique in that it was initiated by laboratory staff, at the suggestion of the DOE Chicago Operations Office Waste Management and Technology Development Division (CH-WMTD), and it is maintained with a field-oriented, total quality management approach to solving waste management problems. Participation in the RADWG is an extra effort by its members in addition to their every day work

responsibilities, and is motivated primarily by the benefits of working together. This group is not DOE Headquarters (HQ) directed nor directly funded by HQ. RADWG members decide what issues are most pressing and feasible for them to tackle. The members have direct ownership of their waste management problems and they have a keen interest in finding technically defensible and workable solutions on a timely basis.

One key to the progress of the RADWG is active participation of experts from a variety of fields related to waste management operations, including waste management, health physics, analytical chemistry, quality assurance, and training. RADWG guidance documents and position papers are developed based on consensus and peer review by experts, with integration among the various expert disciplines of different committees. The individual guidance documents cross reference each other as parts of an entire program for managing waste. Integration of the efforts of several RADWG committees has also contributed to working on issues, such as commercial treatment and disposal, that require communication and decision making among multiple organizations. Continuous improvements to laboratory waste management programs are facilitated by the general exchange of information and lessons learned among counterparts at the various laboratories and as a result of buy-in by the individual laboratories of a program developed by their own expert peer group.

Another key factor has been the involvement of the DOE CH-WMTD in facilitating communication among the associated DOE Operations Offices and between the RADWG and policy makers at DOE HQ. RADWG meetings have also been excellent vehicles for interaction among DOE policy makers and laboratory staffs. DOE personnel who are working on waste management issues of particular interest to the RADWG have been invited to present and participate in these meetings. DOE HQ organizations have come to recognize the RADWG as a valuable resource for technically sound advice and creative ideas about waste management. Through the RADWG, waste management issues that are more specific to the R&D laboratory environment are being increasingly considered and incorporated into DOE guidance and policy making.

### COMMITTEE PROGRESS

The RADWG has maintained the following 11 committees over the past year:

- Release Criteria
- Process Knowledge Certification
- Health Physics
- Analytical Chemistry Laboratory
- Quality Assurance
- Training
- Interlaboratory Analytical Capabilities
- Hanford Liaison
- Commercial Disposal/Treatment
- Integrated Reporting Databases
- Electronic Communications

During the last year, several RADWG committees focused on issues related primarily to the DOE hazardous waste shipping moratorium, while others tackled more general waste management problems. The DOE moratorium on the

shipment of hazardous waste began in May 1991 when it was discovered that very low but detectable levels of radioactivity were contained in hazardous waste shipped from a DOE site to a commercial treatment facility not licensed to handle radioactivity. Following this, DOE established a policy that hazardous waste can not be shipped to a non-licensed treatment, storage or disposal facility until the waste can be certified as having no radioactivity added due to DOE operations.

The RADWG has made significant progress in developing waste characterization guidance and in closing on issues related to waste treatment and disposal. Some of this work has created active interest from other DOE laboratory and non-laboratory sites who share similar waste management problems. Following are highlights of some of the RADWG's important accomplishments during the last year.

Much of the RADWG's focus has been on developing recommendations for characterizing waste under the DOE hazardous waste shipping moratorium. The Process Knowledge Certification, Health Physics, and Analytical Chemistry committees have finalized documents and the Release Criteria committee has a document in review. The Commercial Treatment/Disposal and Hanford Liaison committees have also moved forward on instituting more efficient and economic use of commercial treatment and DOE disposal.

The Process Knowledge Certification (PKC) committee issued its report, "Process Knowledge Certification Facility Guidance" (2), which outlines the elements necessary for a radioactive waste PKC program under the DOE shipping moratorium. The elements are definitions, training, documentation, waste tracking, and quality assurance/quality control. These elements are also generally applicable to any waste PKC program.

The Health Physics committee has recently finalized its "Performance of Surveys for Unrestricted Release Facility Guidance" (3). This document contains methods and criteria for the evaluation of residual surface radioactivity on materials and equipment for the purpose of unrestricted release. The committee developed this guidance with the understanding that it may be used by individual sites to develop site specific procedures and methods. The Health Physics committee is also finishing a guidance document that provides a technical basis for evaluating surface radioactivity. This latter document (4) will supplement the above health physics report (3) with more detailed supporting information.

The Analytical Chemistry committee has concentrated its efforts on developing analytical guidelines for determining radionuclide content in waste materials to provide a basis for defensible laboratory analyses geared toward the requirements of the DOE shipping moratorium. The committee's document, "Recommendations for Analysis for Bulk Radioactive Contamination in Hazardous Wastes," (5) contains: a) screening methods for detecting radioactivity in liquids and solids; b) analytical methods for detecting gross alpha and beta radioactivity in aqueous materials, acid/base solutions, organic solvents, oils/viscous organics/organic solids, soils/rocky debris, and inorganic solids; c) analytical methods for measuring tritium in aqueous materials and acid/base solutions, organic solvents/oils/viscous organics/organic solids, and soils/inorganic solids; and d) gamma spectroscopy of liquids and solids.

The charge to the Release Criteria committee was to recommend analytical and screening sensitivities that could be used throughout the DOE R&D laboratory community that represent state of the art methods which rigorously

investigate the sampled material for radioactivity but do not require herculean expenditure of resources. This committee is composed of laboratory staffs with a variety of expertise, including waste management, health physics and analytical chemistry. The Release Criteria committee is working on a report on recommendations for analytical detection limits that should be used to evaluate whether hazardous waste contains any DOE added radioactivity (i.e., to meet the DOE hazardous waste shipping moratorium performance objective). Preparation of this report has been closely coordinated with development of the analytical chemistry and health physics guidance documents.

The reports issued by the Process Knowledge Certification, Health Physics, and Analytical Chemistry committees have all been forwarded to DOE HQ for possible endorsement. A number of other non-RADWG DOE sites have also expressed interest in using RADWG's recommended guidance at their facilities. RADWG will continue to share its documents with DOE HQ and the DOE complex as they are finalized.

The Hanford Liaison committee was formed to facilitate communication between the laboratories and DOE Hanford disposal facility operators in the spirit of establishing better ways of doing business with Hanford and resolving issues common to many of the laboratories. This cooperative approach has resulted in Westinghouse Hanford Company (WHC) hosting a very successful Hanford users meeting during December 1993. It is anticipated that these interactions will continue to improve waste management operations at the laboratories and relations with Hanford.

The Commercial Treatment/Disposal (CTD) and Hanford Liaison committees have not produced written guidance but have fostered important improvements to the laboratories' waste management programs through efforts by the committees and DOE CH-WMTD to coordinate with other organizations. The CTD committee first formulated the idea of certifying commercial treatment facilities to ship radioactive residue which results from treatment of DOE waste directly to DOE disposal facilities. The current policy is to return the radioactive residue back to the DOE generator site who then, in turn, ships it to the DOE disposal site. Direct shipment of the residue from the commercial treatment facility to the DOE disposal site would save time and administrative costs, as well as reduce potential safety impacts from the extra handling and transportation of the residue.

In conjunction with the Hanford Liaison committee, the CTD committee and CH-WMTD have worked with DOE HQ, DOE Richland Operations Office, Westinghouse Hanford Company (WHC) and Scientific Ecology Group (SEG) in Oak Ridge, TN toward implementing this goal. After obtaining agreement among the parties, a preliminary assessment of SEG was conducted by WHC last October in anticipation of certifying SEG to ship DOE radioactive residue directly to the DOE Hanford disposal facility. It is expected that SEG will next request a formal certification audit from WHC.

## CONCLUSION

The RADWG has made significant strides during the last year in developing consensus based and peer reviewed recommendations and guidance that can be shared by all of its member laboratories, and by implementing new approaches for more efficient and safer waste management operations. Furthermore, much of RADWG's guidance is applicable or adaptable to other DOE sites, and RADWG's ongoing efforts for improved waste management operations may be generalized to other parts of the DOE complex.

Members agree that the RADWG also provides a valuable mechanism for information exchange and for introducing individual laboratory personnel to their counterparts at other laboratories. This provides a network of contacts for experienced technical advice and lessons learned when needed.

The RADWG has been well received by DOE HQ and channels have been opened for communication between the Group and DOE policy makers. Several organizations within DOE HQ view RADWG as a valuable resource for helping shape DOE guidance and to assure that waste management issues at the R&D laboratory sites are considered in DOE policy making.

It is RADWG's bottoms-up, total quality management approach based on field expertise and first-hand experience that have won buy-in from the laboratories and acceptance from DOE. Hopefully, these enthusiastic efforts will continue to result in further improvements to DOE waste management operations.

Those interested in obtaining copies of RADWG published documents may contact Ray Lang at U.S. DOE, WMTD, 9800 South Cass Avenue, Argonne, IL 60439.

## REFERENCES

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