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A RISK COMMUNICATION CASE STUDY: THE NEVADA RISK ASSESSMENT/MANAGEMENT PROGRAM

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The Nevada Risk Assessment/Management Program (NRAMP) is part of a national effort by the U.S. Department of Energy (DOE) to develop new sources of information and approaches to risk assessment, risk management, risk communication and public outreach as these objectives relate to the ecological and human health effects of radioactive and hazardous material management and site remediation activities. This paper reviews the innovation behind the NRAMP project and presents a synopsis of the NRAMP effort which occurred from 1995 to 2000.

The primary goals of the DOE in awarding the cooperative agreement establishing NRAMP were to (1) use a risk-based approach to evaluate the consequences of alternative actions in DOE's Environmental Remediation Programs at sites in Nevada and (2) use a neutral and credible institution outside the DOE to perform the risk assessments and contribute to public education about environmental management issues at the Nevada Test Site.

These goals are action-oriented interpretations of the U.S. National Academy of Sciences advise to DOE on how risk-based decisions could be incorporated into the Environmental Management Program. The resulting report by the U.S. National Research Council (NRC), identified certain obstacles to a risk-based management approach and confirmed the importance of stakeholder involvement in performing the risk evaluations. One of the primary NRC recommendations was that the credibility of an evaluation of site-wide risks would be greatly enhanced if the evaluator were other than DOE, and the NRC identified six criteria which an institution should satisfy in order to establish credibility: (1) it should be perceived as being neutral; (2) it should have management capability; (3) it should have the ability to conduct scientifically valid and responsible risk assessments; (4) its assessments should be subject to independent, external review by technical experts; (5) it should have the ability to plan, organize, manage, and facilitate public participation; and, (6) it should have the ability to effectively communicate complicated scientific information on potential risks and uncertainties.

The implementation of DOE's Cooperative Agreement with the University of Nevada, Las Vegas is believed to be the first site-specific application of the NRC-recommended risk assessment process for supporting site-specific decision-making. As originally proposed, NRAMP developed an integrated stakeholder, scientific peer review and risk assessment process that tracked the goals enunciated in the DOE Notice of Program Interest.

The process of risk assessment for the DOE sites in Nevada is complicated by many contaminant types, potential land uses, exposure pathways, and public interests. In addition, few definitive conclusions can be made about the risks because characterizations are not complete as a result of the size, complexity, and limited funds expended to date.

The NRAMP approach to risk assessment taken during the 1995-1996 effort was designed to assist all involved parties (the NRAMP Stakeholder Working Group and technical team, the Community Advisory Board for Nevada Test Site Programs, and the general public) to participate in the development of a Preliminary Risk Assessment for DOE sites in Nevada (PRA).

For the sake of consistency in dealing with the complex and varied technical issues of DOE sites in Nevada, the PRA focus was limited to Maximally Exposed Hypothetical Individual (MEHI) risk from specific land use scenarios and various contaminant source categories. Critical to this approach was the development and use of consistent assumptions and parameters. Therefore, the NRAMP technical team, with the input of the Stakeholder Working Group and the Scientific Peer Review Panel, determined five source categories and five land use scenarios which formed the basis for the NRAMP technical approach to a preliminary risk assessment. The risk communication effort that resulted in the underlying assumptions for the PRA is highlighted in this paper.

The PRA provides preliminary qualitative and quantitative information about current and future public health risks from the NTS. This information is intended to be applied to the development of refined risk estimates, stakeholder comments on site restoration activities, and prioritization of environmental activities by the DOE. Quantification of risks in this PRA is limited to Maximally Exposed Hypothetical Individual (MEHI) risk scenarios developed in response to stakeholder safety and future land use concerns. Results of risk assessment for these land use scenarios are intended to provide insights on the location, timing, and severity of hazards at the NTS. This MEHI risk approach is initially appropriate at a screening level because of the current land use that precludes public access to contaminated areas and the lack of comprehensive information on all contaminants that would be needed to support a more detailed risk assessment.

The PRA accomplishes two important objectives. First, the PRA identifies gaps in technical knowledge that will be useful to prioritize future risk assessment activities such as gathering additional needed data. Secondly, the procedure has been a valuable experiment in stakeholder involvement in scientific risk assessment.