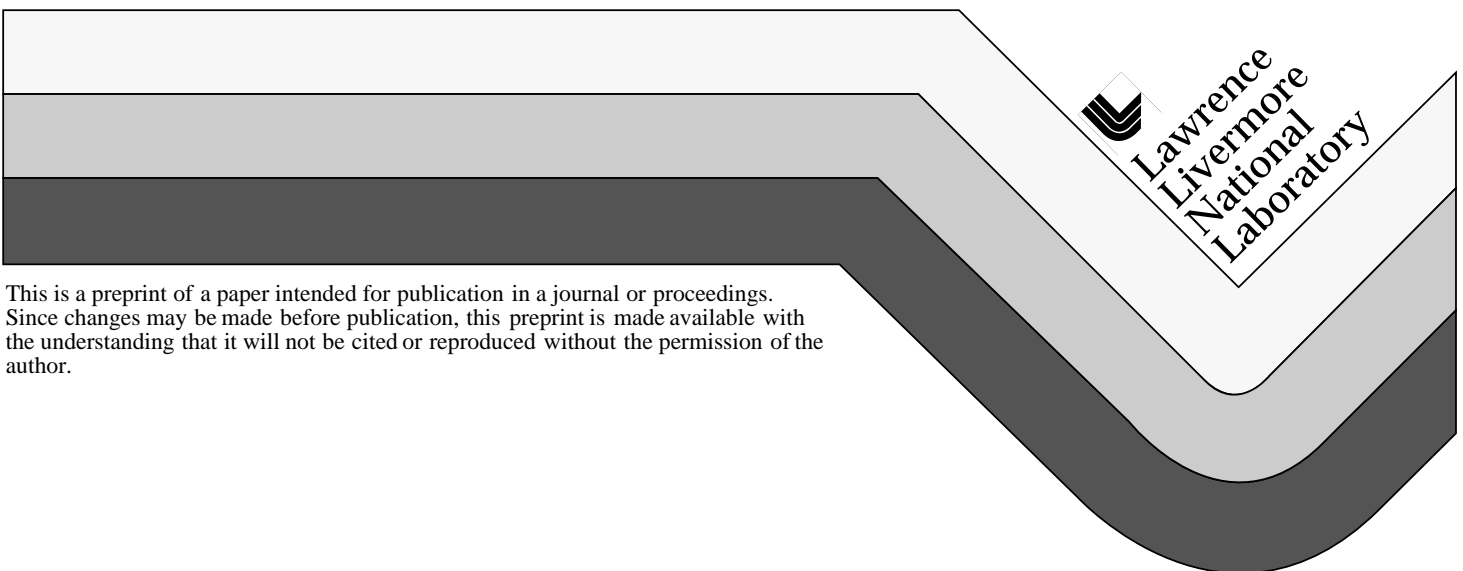


Barriers to Communication and Cooperation in Addressing Community Impacts of Radioactive Releases from Research Facilities

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This paper was prepared for submittal to the
Second International Symposium on Ionizing Radiation
Ottawa, Ontario, Canada
May 10-14, 1999

May 5, 1999



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**Barriers to Communication and Cooperation
in Addressing Community Impacts of Radioactive Releases
from Research Facilities^{#,+}**

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May 5, 1999

In recent years, the public has become increasingly concerned about the effects of human activities on health and the environment. Releases of radioactivity, in particular, excite feelings of fear or anger, and frequently scientists must explain or defend such releases and their probable consequences to concerned or possibly even hostile audiences.

Generally, there are at least four categories of "stakeholders" to consider: decision makers (e.g., government regulators and politicians); scientists and other professionals doing the analysis/assessment; environmental activist or public interest groups; and "ordinary" citizens (nearly everyone else not in one or more of the first three camps). Particular individuals may fall into more than one of these categories. Decision makers and scientists often prioritize problems differently than activists, ordinary citizens, and other stakeholders. When this is coupled with some people's disinclination to trust authority figures, meetings can turn into confrontations. The media can significantly influence how the public views the issues.

The goals (ideally) are to establish a dialogue among the parties, create mutual trust, and resolve problems in a way satisfactory to all parties. Representatives of the public and activist groups should be brought into the decision-making process, and ways have to be found to make progress at a reasonable rate even with multiple-stakeholder involvement. Scientists must find ways to present to both the public and decision makers clear, succinct analyses of the release of hazardous, in particular radioactive, materials and the potential effects on the environment and public health. Uncertainties stemming from lack of knowledge about the extent of contamination and the likely health effects from exposure should be explicitly acknowledged and communicated. The relevance of probability considerations to real life solutions and decision making has to be explained. The reluctance of the public to accept risk-based definitions of what is harmful should be addressed. How can scientists explain disagreements among themselves on such critical issues as dangers of low-levels of ionizing radiation? How can each side understand the other side's position? Scientific issues must be considered together with economic and political realities. In assessing risk, both the objective elements of facts and data and the subjective elements of what the data mean and what is to be gained or lost by different courses of action have to be considered.

[#] Paper prepared for presentation at the Second International Symposium on Ionizing Radiation, Ottawa, Ontario Canada, May 10-14, 1999; abstract submitted September 4, 1998.

⁺ Work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.

Two instances of research facilities responding to public scrutiny will be discussed. The first concerns emissions from a "tritium labeling facility" operated at Lawrence Berkeley National Laboratory (LBNL); the second deals with releases of plutonium from Lawrence Livermore National Laboratory (LLNL). Both laboratories are located in the populous San Francisco Bay area of Northern California, separated by only about 50 miles. However, the missions of each laboratory and the types of communities in their vicinities contrast markedly. Berkeley is a large, cosmopolitan city with a tradition of liberalism and activism; suburban Livermore is more conservative, and home to many LLNL and other high-technology-industry employees and their families. LBNL emphasizes basic research in the civilian rather than military realm; the multifaceted mission of LLNL includes a special responsibility for the design, safety, and reliability of nuclear weapons.

LBNL's tritium labeling facility, whose function is to help biomedical researchers develop new ways to study cell metabolism and test new disease-curing products, releases small quantities of tritium to the atmosphere in Berkeley, a "nuclear free zone." A group designated the Tritium Issues Work Group has conducted monthly meetings the past two years, under the leadership of the U.S. Environmental Protection Agency (EPA) and the California Department of Health Services (CDHS). The Work Group includes representatives from two environmental activist groups, the City of Berkeley, the University of California, the Department of Energy (DOE), LBNL, and other government agencies and scientific laboratories.

In the second case, a public health assessment of possible effects of LLNL operations on Livermore and other nearby communities was undertaken by the federal Agency for Toxic Substances and Disease Registry (ATSDR) and CDHS in the fall of 1996. Discussion and debate in regular public meetings, featuring a panel or "site team" with representatives from EPA, CDHS, LLNL, several environmental activist groups, ordinary citizens, the City of Livermore, the state Department of Toxic Substances Control (DTSC), and the Regional Water Quality Control Board (RWQCB), has focused on the issue of soil contaminated with plutonium in Big Trees Park, located about one-half mile west of LLNL. An earlier stage of scientific investigation and public concern over the Big Trees Park issue preceded the participation of ATSDR by about three years. The procedure to determine the extent of the problem and find a solution in the case of Big Trees Park, unlike that in Berkeley, was conducted under a managerial structure governing cleanup of Superfund sites, of which LLNL is one. (LBNL presently is not a Superfund site, but has been placed on a list of 3000 "eligibles" by the EPA.)

There are many parallels between these two cases, both of which are still ongoing. In both, the national laboratory is the acknowledged source of low-level (by regulatory standards) radioactive contamination in the community. A major purpose of both investigations is to determine the degree of the contamination and the threat it poses to public health and the environment [1]. The examining panel or committee is similarly constituted in the two cases, including representatives from all four categories of stakeholders mentioned above. Both involved community participation from the beginning. The levels of outrage over the events triggering the assessment are comparable; though "discovered" or "appreciated" only a few years ago, the release of radiation in both cases occurred or began occurring more than a decade ago. The meetings have been conducted in a similar manner, with comparable frequency, often utilizing the services of professional facilitators. In both cases, the sharply contrasting perceptions of risk commonly seen between scientists and activists were present from the beginning, though the contrast was sharper and more problematical in the Berkeley case [2,3].

Yet, the Livermore case seems to be progressing towards a satisfactory resolution, while the Berkeley case remains mired in ill-will, with few tangible results after two years of effort.

The validity of these general conclusions is suggested by the developments recounted in the following two paragraphs.

Regarding the Livermore Big Trees Park assessment, a report by LLNL describing the soil sampling plan [4] contains over 100 pages of a “responsiveness summary,” in which LLNL attempts to address comments and questions from stakeholders on the plan and related concerns. A newspaper article (Valley Times, Livermore, Aug. 13, 1998) comments on this plan, quoting regulators, scientists, and activists as supporting it. Early this year, the U.S. DOE Oakland Operations Office said in its quarterly community involvement newsletter [5] that samples showed plutonium concentrations below the EPA’s level of concern for residential soil, and gave Web site addresses for viewing sampling data, the media press release, and the sampling study [6].

As to the issue of the Berkeley tritium labeling facility, funds (\$100,000) appropriated early in the process to create and execute a sampling plan to determine the level of tritium contamination in the environment remain unspent, because agreement was never reached on how to spend them. Newspaper articles spanning the duration of work on this issue up to the present time indicate the frustration and lack of progress. A San Francisco Examiner article (Jan. 13, 1997) reads “Berkeley Protest Stirs Over Tritium Emissions: In the hills overlooking the city (*Berkeley*), a 30-foot-tall column at the Lawrence Berkeley National Laboratory ejects minute amounts of tritium, a radioactive material used for medical research. Not far away, a protest is brewing.” Twenty seven months later, a Valley Times, Livermore, article on April 24, 1999, reports “4 Quit Lab’s Tritium Panel: Four members of a committee investigating how much radioactive tritium leaks from Lawrence Berkeley Laboratory have resigned in protest, calling the panel “a total sham” with no interest in finding the truth... activists...accused the lab of spewing the invisible carcinogen (*tritium*) while regulators look the other way...Lab officials and the Environmental Protection Agency insist the problem has been overblown by alarmists and that any tritium escaping from the lab falls far below state and federal guidelines...the panel will continue its work...” [italicized words added]. While making these statements in a press conference, the activists were flanked by Berkeley City Council members and a staff person of a member of Congress.

It is natural for us (trained as scientists and basically spectators to these two events) to try to explain the difference in progress in terms of what we see as the most telling contrasts between the two cases [7]. The reader should be mindful that what we say here expresses our personal views, and certainly not the official views of LLNL, LBNL, the University of California, or the U.S. Government.

We perceive a wide gap in negotiation skills (at the very least), and a considerable difference in willingness to compromise, between the environmental activist groups participating in the two cases. A degree of contentiousness existed from the start among the participants in the Berkeley case—particularly between the environmental activists and the scientists/regulators—that was not approached in the Livermore case, and which was and still is severe enough to stifle meaningful progress. The Berkeley activists are considerably more aggressive, we believe, in arguing their points of view, making demands about what should be done, and verbally assailing the scientists and government regulators [8].

Factors contributing to this state of affairs in the LBNL case are probably many and deep, and we claim no special skills or extraordinary insight in analyzing group dynamics or in understanding what drives people to behave the way they do. With these caveats and those stated above regarding the unofficial and personal nature of our interpretations and opinions, we offer the following comments on the barriers to communication and cooperation that distinguish the Berkeley and Livermore cases. In no particular order, they are (a) the presence of a higher degree of polarization between the Berkeley activists and the

“establishment,” as represented by government scientists and regulators, (b) the absence, in the Berkeley case, of an activist leader with skills and effectiveness comparable to a well-known leader in Livermore, (c) frequent displays by several of the Berkeley activists of incivility, distrust, and disrespect for the regulators and scientists, (d) extraordinary difficulties in reaching consensus in the Tritium Issues Work Group meetings, perhaps because goals diverged among the factions, (e) a considerable degree of resentment by the Berkeley activists over the imbalance in conditions of participation, pitting well-paid, tax-supported professionals against “citizen volunteers,” (f) the brick wall that divides the perspectives of “no safe dose” and “levels below regulatory concern” when trying to reach conclusions about radiation dangers to the community, and (g) unwillingness to consider both sides of the risk-reward coin: benefits to the community and society at large of the tritium labeling activity, vs. the health risk from small quantities of tritium released to the environment.

The outcomes reached by diverse groups of people interacting in volatile situations can be very different, as these two cases exemplify. The success of the endeavor can depend on mutual respect and the willingness of the stakeholders to cooperate and compromise. Each side should make every effort to understand the views of the opposition and maintain communications. When one side arrives at the meeting armed with an impossible agenda (e.g., there is no safe dose; close down the facility), a stalemate is practically guaranteed; the barrier to communication and cooperation is insurmountable.

Solving or preventing problems of technological origin through democratic participation may be extremely inefficient, and even painful, but there is no satisfactory alternative.

References and footnotes

[1] There are many indicators of the public health impacts in these two instances. For example, one estimate is provided in the LBNL case by its calculation of dose to the maximally exposed member of the public caused by tritium emissions from the stack of the tritium labeling facility, and in the LLNL case by ATSDR’s calculation of the dose to a “pica” child who regularly plays in Big Trees Park, Livermore, eating some of the dirt and breathing dust in the area where the highest plutonium concentration was found. These calculations give results of 1.4% and 0.4%, respectively, of the dose allowed by federal standards.

[2] Early in the process to address contamination from LBNL’s tritium labeling facility, a film “Radioactive Berkeley—No Safe Dose” was shown by the activists at a Berkeley City Council meeting, featuring Dr. John Goffman presenting his view that there is no safe level of radiation, and attributing 50% of cancers in the twentieth century to effects of low-level ionizing radiation.

[3] A useful Internet reference offering multiple linkages to a large quantity of interesting and educational material on radiation risks and effects is the “Radiation Information Network” at the address <http://www.physics.isu.edu/radinf/qanda.htm>.

[4] “Livermore Big Trees Park 1998 Soil Sampling Plan,” Lawrence Livermore National Laboratory, UCRL-ID-130551, October 1998.

[5] “News You Can Use,” Vol. 1 Issue 13, March 1999, under the headline “Plutonium Data Shows Park Safe.”

[6] Sampling data can be viewed at <http://www-erd.llnl.gov/ecr/> and the media press release and the sampling study can be accessed at <http://www-erd.llnl.gov/bigtrees/>.

[7] A difference whose impact is difficult to gauge is the effect on the Livermore case of the Superfund managerial framework being applicable. This framework can allow certain delegated government regulatory agencies to have more powerful roles than others in setting the “rules of the game” (such as imposing criteria about how the threat to the public will be ascertained, and

