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Collaboration versus communication: The Department of Energy's Amchitka Island and the Aleut Community

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ABSTRACT

Increasingly managers and scientists are recognizing that solving environmental problems requires the inclusion of a wide range of disciplines, governmental agencies, Native American tribes, and other stakeholders. Usually such inclusion involves communication at the problem-formulation phase, and at the end to report findings. This paper examines participatory research, the differences between the traditional stakeholder involvement method of communication (often one-way, at the beginning and the end), compared to full collaboration, where parties are actively involved in the scientific process. Using the Department of Energy's (DOE) Amchitka Island in the Aleutians as a case study, we demonstrate that the inclusion of Aleut people throughout the process resulted in science that was relevant not only to the agency's needs and to the interested and affected parties, but that led to a solution. Amchitka Island was the site of three underground nuclear tests from 1965 to 1971, and virtually no testing of radionuclide levels in biota, subsistence foods, or commercial fish was conducted after the 1970s. When DOE announced plans to close Amchitka, terminating its managerial responsibility, without any further testing of radionuclide levels in biota, there was considerable controversy, which resulted in the development of a Science Plan to assess the potential risks to the marine environment from the tests. The Consortium for Risk Evaluation with Stakeholder Participation (CRESP) was the principle entity that developed and executed the science plan. Unlike traditional science, CRESP embarked on a process to include the Alaskan Natives of the Aleutian Islands (Aleuts), relevant state and federal agencies, and other stakeholders at every phase. Aleuts were included in the problem-formulation, research design refinement, the research, analysis of data, dissemination of research findings, and public communication. This led to agreement with the results, and to developing a path forward (production of a biomonitoring plan designed to provide early warning of any future radionuclide leakage and ecosystem/human health risks). The process outlined was successful in resolving a previously contentious situation by inclusion and collaboration with the Aleuts, among others, and could be usefully applied elsewhere to complex environmental problems where severe data gaps exist.

1. Introduction

Protection and sustainability are important aspect of management for contaminated sites, and are particularly important for nuclear or chemical wastes that cannot be remediated and require continued safe, containment (Burger, 1997c, 2000a, b, 2006; DOE, 1999; Cury et al., 2005). In general, the cleanup at DOE sites will not have removed many of the long-lived radioactive and hazardous contaminants, necessitating long-term stewardship into the indefinite future (DOE, 1999, 2000). The task is also difficult because many large DOE sites have many different habitats and ecosystem types. Buffer lands around the industrial areas of DOE sites deserve suitable protection as valuable ecosystems (Dale and Parr, 1998; Brown, 1998; Burger et al., 2003). While everyone can agree on the importance of site characterization (including ecological evaluation), protection, and sustainability, it is difficult to agree on the methods of achieving these goals, and indeed, of defining them (Moran, 1994; Kimball, 1997; Burger and Gochfeld, 2001; PCSD, 2001).

In this paper we compare traditional approaches to applying science with collaborative approaches, describe the collaborative

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approach used for Amchitka Island with respect to the Aleuts, and draw lessons learned from the collaborative process to solve long-standing complex and contentious problems. We especially focus on the Aleuts because for Amchitka, they are the most directly interested and potentially affected parties, and many live on remote islands where subsistence foods play a large role in their cultural and nutritional lives (Hamrick and Smith, 2003; Fall et al., 2006; Burger et al., 2007c). Further, it is becoming increasing clear that it is essential to consider the needs and rights of tribal peoples, not only because of legal treaty rights (Nez Perce Tribe, 2003), but because they have special knowledge of the distribution and behavior of local biota, their subsistence lifestyles, and their cultural values.

The public, governmental agencies, scientists, and the private sector are increasingly interested in restoring and managing ecosystems that have been damaged by human activities, including physical disruption and contamination. While managers must understand the complex physical, ecological, and contamination conditions of their sites within the context of current and future land uses, human health professionals must understand complex transport pathways that ultimately lead to human exposure and possible harm, while ecotoxicologists examine the pathways, fate and effects of chemicals for ecoreceptors. Public policy makers and the public, however, are interested in plans for protecting both human and ecological health into the foreseeable future (Leitao and Ahern, 2002). Among other characteristics, an ecosystem should have functioning food chains, nutrient cycling, energy flow, predator–prey relationships and sustainability, as well as providing goods and services to humans (Risser, 1994). Sustainable ecosystems are resilient, and can recover from natural disasters such as fires, hurricanes, or other storm events. Ecosystem management is difficult, however, because of ecosystem complexity; ecosystems have hundreds of species, several trophic levels (producers, primary and higher level consumers), complex interactions, and several levels of organization (species, populations, communities, ecosystems, and landscapes (Burger, 2006)). Evaluating (or site characterization), restoring, and protecting ecosystems is a well-established goal of environmental management (Cairns, 1980, 1994; NRC, 1986; Bartell et al., 1992; Cairns and Niederlehner, 1996; Cairns et al., 1992; Barnthouse, 1991, 1994; Suter, 1997, 2001; Burger, 1997a, b, 2007a, b; Burger et al., 2007a, b).

2. Community-based collaborative research

Although many agencies and groups are committed to involving Native Americans and Alaskan Natives, it frequently does not occur for a number of reasons, such as time or money constraints, inability to engage these communities, or inflexibility in research approaches and designs. We argue below, however, that collaboration with Aleuts not only greatly improved the research, but it led to greater acceptance of the research results and of the steps leading to closure of Amchitka.

The research approach discussed below fits into two frameworks: participatory or collaborative research, and environmental justice. Further, there are places where participatory research has been more successful, and these examples also indicate the importance of being inclusive. This approach has been particularly useful in the area of exposure and risk assessment for the Yupik people (Carpenter et al., 2005), the Inupiat (Johnston, 2007), the Mohawks (Fitzgerald et al., 1999; Schell et al., 2005)), as well as other Native Americans (DeCaprio et al., 2005). These and other projects indicate a growing trend for inclusion of Native Americans, Alaskan Natives, and other ethnic groups in environmental assessments, exposure assessments and formal risk assessments that affect their health, culture and lifestyle.

3. Background on Amchitka Island

Amchitka Island is one of over 100 sites in 34 states that comprise the Department of Energy's "Nuclear Weapons Complex" (Crowley and Ahearne, 2002). Most of these lands were appropriated in the 1940s and 1950s for the nuclear mission. DOE sites in several states include traditional Native American lands some of which were ceded to DOE. In Alaska, Native rights come from several different authorizing acts and legislation, including the Alaska Native Claims Settlement Act (ANCSA), the Alaska National Interest Lands Conservation Act (ANILCA), the Venetie Decision, and the Constitution of the State of Alaska, among others. Several of the large DOE sites were built on lands that were traditional Native American hunting and fishing grounds, including the Yakama Indian nation, the Umatilla Tribe, the Wanapum, and the Nez Perce Tribe at the Hanford site in Washington, the Shoshone-Bannock land on Idaho National Laboratory, and the San Ildefonso Pueblo, Jemez Pueblo, Santa Clara Pueblo, and Cochiti Pueblo on the Los Alamos National Laboratory (Arnon and Hill, 1979; Edelman, 1979; Lange, 1979; Sando, 1979; Schuster, 1998; Stern, 1998; Gephart, 2003; Burger et al., 2004, 2008). Similarly, Aleuts (also called the Unangan) historically inhabited many of the islands in Aleutians.

Amchitka Island (51°N lat., 179°E long.) was one of the islands traditionally inhabited by Aleuts, although they had abandoned the island before the development of the World War II military base, or the decision to test nuclear weapons. The Aleut Corporation has applied for transfer of over 120 archeological sites on Amchitka, as authorized by ANCSA. In Alaska, Native American communities are organized into corporations, and sometimes form associations, such as the Aleutian Pribilof Island Association. Amchitka was the site of three underground nuclear tests in 1965–1971, over objections from the Aleuts, the State of Alaska, the public and several other countries (Kohlhoff, 2002). Although Amchitka is 280 km from the nearest active Aleut community on Adak Island, the Aleuts consider the whole Aleutian Chain their home, partly because they travel freely among islands for employment, and to visit family and friends (Burger et al., 2007d, e).

At the time, the releases of radiation to the surface during the tests were not considered to pose a serious human health risks (Seymour and Nelson, 1977; Faller and Farmer, 1998) because the radioactive material was believed to have been spontaneously vitrified when the intense heat of the underground blasts melted the surrounding rock (DOE, 2002a). Amchitka Island is part of the Alaska Maritime National Wildlife Refuge, and has some of the largest and most diverse seabird colonies in North America, as well as significant marine mammals. Although the US Fish and Wildlife Service is the landowner, responsibility for the clean up of Amchitka rested with the National Nuclear Security Administration (NNSA, a division of DOE).

The controversy that continued to surround Amchitka increased dramatically when DOE announced its plans to "clean up" and close Amchitka (Greenpeace, 1996; Kohlhoff, 2002). It was possible to clean up the surface of Amchitka by traditional remediation methods; however, the Aleuts, the State of Alaska, and the public were concerned about the possibility of subsurface transport of radionuclides from the three test cavities to the marine environment. Another concern was that this region of the Aleutians is one of the most seismically active and dynamic subduction zones on earth (Eichelberger et al., 2002). However, the immediate concern was whether the subsistence foods of the Aleuts, as well as the commercial fish and shellfish from the island vicinity, were safe to eat (Burger et al., 2006b, 2007d, e). The Aleuts who live in small villages on remote islands are largely dependent upon locally-derived plants and animals; Aleuts