Indigenous Peoples of North America: Environmental Exposures and Reproductive Justice

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BACKGROUND: Indigenous American communities face disproportionate health burdens and environmental health risks compared with the average North American population. These health impacts are issues of both environmental and reproductive justice.

OBJECTIVES: In this commentary, we review five indigenous communities in various stages of environmental health research and discuss the intersection of environmental health and reproductive justice issues in these communities as well as the limitations of legal recourse.

DISCUSSION: The health disparities impacting life expectancy and reproductive capabilities in indigenous communities are due to a combination of social, economic, and environmental factors.

The system of federal environmental and Indian law is insufficient to protect indigenous communities from environmental contamination. Many communities are interested in developing appropriate research partnerships in order to discern the full impact of environmental contamination and prevent further damage.

CONCLUSIONS: Continued research involving collaborative partnerships among scientific researchers, community members, and health care providers is needed to determine the impacts of this contamination and to develop approaches for remediation and policy interventions.

As such, reproductive justice, a term that has not yet appeared in the environmental health literature, embeds reproductive rights in an intersectional framework that includes social justice and human rights (Luna 2010). Reproductive justice stresses both individual and group rights because the ability of a woman to determine her reproductive destiny is in many cases directly tied to conditions in her community (Shen 2006). The concept of environmental reproductive justice involves ensuring that a community’s reproductive capabilities are not inhibited by environmental contamination.

In this case studies we highlight below, struggles for environmental and reproductive justice have often converged as communities have become concerned about the impact of environmental contamination on their ability to reproduce and create culturally competent tribal citizens. These issues were explored in July 2011 in an Environmental Reproductive Health Symposium and Retreat organized by the First Environment Collaborative in Hot Sprints, South Dakota, near the homeland of the Lakota Sioux.

The focus of this meeting was to explore the common issues of exposure to environmental contaminants and the health consequences of this exposure. The intent was to facilitate and nurture partnerships among the indigenous community organizations, researchers, scientists, and health care providers. The recommendations that came from the symposium include the need for additional community-based research that will support efforts to achieve environmental reproductive justice, and the need to support policy regulations that will better protect indigenous communities from both local and more widespread sources of environmental contamination.

Below we present the environmental and reproductive health issues faced by each of the indigenous communities who were represented at this symposium, and discuss the need to develop the concept of environmental reproductive justice.

Aamjiwnaang

Perhaps the most strikingly contaminated community is that of the Aamjiwnaang near Sarnia, Ontario, Canada, a 12-km² reserve that is home to about 850 Anishnaabe First Nations people. The reserve is surrounded by major industrial facilities located within 25 km, including oil refineries, chemical manufacturers (40% of Canada’s chemical industry), and manufacturers of plastics, polymers, and agricultural products. The area is known as “Chemical Valley.” Levels of air pollutants, including volatile organic compounds, are high (Atari and Luginaah 2009). In 1996, hospital admissions for women in Chemical Valley were 3.11 times the expected rates for women and 2.83 times those for men than would be expected based on other rates for Ontario. These admissions were especially pronounced for cardiovascular and respiratory ailments, and were hypothesized to be pollution related (Fung et al. 2007). About 40% of Aamjiwnaang residents report the use of an inhaler, and 17% of adults and 22% of children are reported to have asthma (MacDonald and Rang 2007). The ratio of male births declined over the period 1984–1992 from > 0.5 to about 0.3, a change that may at least partly reflect effects of chemical exposures (Mackenzie et al. 2005). Releases of chemicals have also interfered with the community’s cultural life, affecting hunting, fishing, medicine gathering, and ceremonial activities (MacDonald and Rang 2007).

St. Lawrence Island (SLI)

The SLI Yupik live in two villages of about 800 people each. SLI, the largest island in the Bering Sea, lies just 240 km south of the Arctic Circle and is distant from industrial contamination sources. However, the Arctic acts as a “cold trap” and is a hemispheric sink for persistent organic pollutants (POPs) that are transported through a process known as global distillation via atmospheric transport from warmer regions (Wania 2003). In addition, there are two abandoned military sites on the island that contain fuels, pesticides, PCBs, metals, and solvents.

POPs bioaccumulate and biomagnify in the lipid-rich Arctic food webs, some to dangerous levels. The rendered oils of bowhead whale, seals, and walrus contain PCB concentrations of 193–421 ppb (Welfinger-Smith et al. 2011). For reference, the U.S. EPA risk-based consumption limit for PCBs in fish to avoid excess risk of cancer is 1.5 ppb (Welfinger-Smith et al. 2011). Rendered oils, blubber, and other fatty tissues from marine mammals are critical components of the traditional diet that provide important nutritional and cultural benefits. Blood serum of the Yupik people contain PCB levels 4–12 times higher than that of the general U.S. population. The predominant source is global transport; however, the former military site at Northeast Cape contributes to the PCB exposure (Carpenter et al. 2005). Although traditional foods are the primary source of exposure to POPs, harvest and consumption of these foods is a defining attribute of the SLI Yupik way of life—a necessary part of maintaining cultural identity. Although a systematic health study has not been conducted in these populations, some environmental testing has been commissioned by local nonprofit organizations, which found PCB levels 25,000 times the standard for human health and 1,000 times over the standard for wildlife habitat in Los Alamos Canyon (Amigos Bravos and Concerned Citizens for Nuclear Safety 2006). Amigos Bravos won a settlement in May 2011 against the U.S. EPA and Los Alamos over discharge permits that will require clean up of a number of sites, increase monitoring, and install pollution control measures (van Buren 2011). However, these measures do little to determine the impact this contamination has had on the health and culture of the region’s residents.

Oglala Lakota, Pine Ridge

Although starkly beautiful in landscape and home to myriad artists and storytellers, the Pine Ridge Indian Reservation in South Dakota, home to 25,000 Oglala Lakota people, is notoriously poverty stricken. Forty-nine percent of the residents live below the federal poverty level, and the infant mortality rate is five times higher than the national average (Ruffin 2011). Native Americans in the Northern Plains region have a cancer mortality rate approximately 40% higher than that of the overall population (Rogers and Peteriet 2005). Although these health disparities are often attributed to the intense poverty in this region, since the late 1970s community organizations like Women of All Red Nations (WARN) have suspected links between Lakota health issues and the region’s history of uranium mining. WARN has cited the high rates of miscarriage and reproductive cancers among Lakota women as evidence of the adverse effects of uranium contamination.
Impacted by their exposure to PCBs. Aspects of Mohawk health may be adversely associated with lower serum testosterone levels in Mohawk men, which could be due to the estrogenic effects of higher serum PCBs (Denham et al. 2005), reached puberty at 12 years of age if they had 2008). Mohawk girls were more likely to have betes (Codru et al. 2007), cardiovascular (Schell et al. 2008) and elevated risk of dia­
ments in cognitive (Haase et al. 2009; Newman et al. 2009) and thyroid function (Unger 2004), and did not give results to the commu­
community in their publications, used blood samples for unauthorized projects (Schnarch et al. 2002) highlighted the importance of con­
mits). Litigation under federal environmental laws and federal Indian law is fraught with challenges. Federal Indian law, a body of judge-made law arising mostly from litigation primarily before the United States Supreme Court, overwhelmingly denies environmental and cultural rights to Native American people. In addition, federal environmental legisla­
ity rarely recognizes environmental justice as a cause for action. Even when activists achieve victories in the courts, legislation and admin­
rative agency rule makings can often undo years of environmental justice litigation. For these reasons, it is essential to develop policies that would better protect AI/AN communi­
ties from pollution, rather than leaving the matter to courts.

Native Communities and Research
Because indigenous communities often do not have the legal, political, or economic means to resist the placement of polluting industries, indigenous people may suffer excess illness as a consequence of involuntary environmen­
tal exposures. However, because of historic antagonism to and distrust of non-native gov­
ernments and academics, often these communities have not been studied to determine the extent of illness. In the past, some researchers entered indigenous communities with pre­
developed projects, did not ask for community input, pressured residents into taking part in the studies, treated Natives as subjects and not colleagues, sensationalized problems in the community in their publications, used blood samples for unauthorized projects (Schnarch 2004), and did not give results to the community (Schell and Tarbell 1998).

These experiences have led some native communities to avoid engaging in research and others to make themselves available only to research projects that will include them as equal partners. The Akwesasne Mohawk developed an effective partnership with researchers, which resulted in > 50 published papers. Mohawk authors Arquette et al. (2002) highlighted the importance of con­
tinued collaborative research because of the need for better site- and Nation-specific data. This will provide tribal decision makers with specific information about contaminant lev­
els in various local media and biota. These types of studies can also collect information about traditional cultural practices and natu­
r resource use—information that can then be used to support the protection of natural resources and support the transfer of tradi­
tional knowledge and cultural practices to future generations.

To conduct such research, scientists and community members must develop equal and cooperative partnerships (Harding et al. 2012). Utilizing the community’s kinship network is important in garnering support for a study, recruiting study participants, and disseminating information. Especially important for the success of future environmental and reproductive health studies is increasing the number of indigenous midwives, physicians, and researchers who understand the potential health impacts of exposure to environmental contaminants.

Environmental Reproductive Justice
Concerns about the community’s ability to reproduce, whether physically through the birth of healthy children or culturally through the passing on of traditional practices, has sparked interest in the need for environ­
mental health research. As stated above, in Aamjiwnaang there was the noticeable decrease in male birth ratio (Mackenzie et al. 2005), which residents attribute to their proximity to petrochemical plants. At Akwesasne, a midwife pushed for health studies because of concerns of local mothers about the number of miscar­
riages in the community and the possibility of contaminated breast milk. Studies found that Mohawk women who ate local fish had higher levels of contaminants in their breast milk than a control group (Fitzgerald et al. 1998). Breastfeeding rates for AI/AN populations are well below the national average (Spieler 2010), an issue that health care providers are seek­
ing to rectify. Indigenous mothers need to be confident that their breast milk is safe for their infants if these statistics are to be improved.

The reproductive capabilities of Mohawk women in Akwesasne are also affected by contamination; for example, PCB exposure has been associated with reducing the age of
menarche in Mohawk girls (Denham et al. 2005). The Tewa Pueblo are concerned about the potential of birth defects connected to radiation exposure, and the women of Pine Ridge have attributed their high rates of miscarriage and reproductive organ cancers to contamination from uranium mines (Unger 2004). S1I Yupik people attribute their perceived high rate of cancer and other diseases to environmental degradation of Native communities, to reproduce culturally informed citizens requires a clean environment. In Aamjiwnaang, oral traditions once passed down from grandfathers during fishing or grandmothers during berry picking and medicinal gathering are being lost as those activities are no longer practiced because of concerns about these foods being contaminated. Rocks once used for sweat lodges are no longer being collected from local streams because the streams have become contaminated. The cedar used for making tea, smudging, and washing babies contains vanadium at concentrations as high as 6 mg/kg (ALS Laboratory Group Analytical Report, unpublished data), reflecting local releases to air of >61 tons of vanadium between 2001 and 2010 (Environment Canada 2012). At Akwesasne, community members report a loss of language and culture around subsistence activities like fishing, which have been largely abandoned because of fears of exposure to contaminants. The generational reproduction of culturally informed interpersonal relationships has been affected as much as physical reproduction. We want to expand the definition of reproductive justice to include the capacity to raise children in culturally appropriate ways. For many indigenous communities, to reproduce culturally informed citizens requires a clean environment.

Conclusion

Modern environmental law in North America is predicated on federal–state partnerships that did not initially account for pollution and environmental degradation of Native America (Grijalva 2011). Current regulatory gaps make it difficult to prevent and rectify environmental contamination that impacts AI/AN communities. This contamination threatens not only the health of indigenous communities, it also infringes on their reproductive rights, including the ability to impart cultural land-based knowledge to their children. Thus there is a great need for the concept of environmental reproductive justice in environmental health research. Continued research, involving collaborative partnerships among researchers, health care providers, and community members, is needed to determine the impact of environmental contamination on community members’ health and to develop necessary remediation, preventative measures, and protective policy interventions.

References


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