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Community Stress and Psychosocial Hazards

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Exposure to hazardous materials often is the highest in locations occupied by people of lower income and education, and usually members of minority groups. Because of factors in these neighborhoods such as crowding, poor quality housing, inadequate access to healthy food and recreational opportunities, family turmoil, and violence, there is considerable ongoing stress in such communities. These factors collectively have adverse effects on health; and there is growing evidence that they interact with exposure to toxic elements in the environment, such as air pollution, to worsen health outcomes. During the last 40 years, there has been quite a bit of research documenting the existence of excess levels of psychosocial stress in communities affected by chronic contamination by toxic waste. The toxicological literature documents the effects of controlled laboratory stress on animals exposed to toxic substances, i.e., that stress can cause shifts in dose-response curves for some substances for some stressors.

From a neurobiological viewpoint, the most important points are: (a) There is a response network for stress—the network of allostasis—that responds to psychological stressors, generated through the brain, the central organ of stress and adaptation; (b) this network—or at least parts of it—respond to toxic agents, e.g., air pollution leads to inflammation which, in turn, activates cortisol responses; (c) the imbalances in the network due to chronic psychological stress and lifestyle (e.g., poor sleep, excess calories and obesity/diabetes, alcohol) cause the network to respond differently to those toxic agents, and evidence so far indicates that there is synergy and enhancement of, for example, the inflammatory response and further imbalance in the network; and (d) imbalance in the network leads, over time, to allostatic load/overload, which accelerates disease processes. The above points lead to the general conclusion that one cannot study toxic agents in a vacuum without considering the psychological stressors and their impact on the body physiology through families and neighborhoods and interpersonal conflicts.

Other conclusions include:

Current risk assessment does not take into account the effects of psychosocial stress in addition to the toxic exposures in the Superfund or any other communities that the U.S. Environmental Protection Agency serves. Too often, there has been an “either-or” mentality regarding the causation of disease related to low-level environmental contamination. Many community members and scientists even felt that stress was a red herring designed to denigrate their very real health complaints thought to be due solely to toxic exposure.

Psychosocial stress itself has not been widely recognized as a risk factor for adverse health outcomes until research on the underlying causes of the current epidemic of heart disease in our society showed stress to be a potent and under-recognized risk factor.

The role of psychosocial stress in disease causation needs to be more fully elucidated because it is a potentially modifiable factor in the toxin-disease chain. Most of the prevention strategies at contaminated sites concentrate on practical engineering solutions designed to reduce or eliminate exposures. Obviously, where possible, this always should remain the primary strategy. But, in communities with known past exposures or hard-to-prevent ongoing exposures, other preventative measures such as community health

education and measures designed to reduce community discord and shore up resilience also may prove useful and ameliorative to health.

For Agency personnel charged with ameliorating toxic contamination, it is critically important to be aware that the problems confronting contaminated communities are related not only to technical clean-up and physical health, but also to social aspects of the community. In many contaminated communities, a destructive social process develops that exacerbates the psychological and physical health impacts on community residents. If this goes unrecognized, outside agency intervention may make the social process even more destructive. On the other hand, if an agency works in partnership with a community, it is possible to decrease the development of social stresses and increase the social capital and collective efficacy available to a community to respond to contamination.

Positive involvement of local leadership and community groups with the process of environmental clean-up and/or containment is crucial. Open, honest communication that accurately and realistically conveys the risks of the situation and the processes involved in response is essential to building trust, and trust is the most essential element needed in helping to build a positive response from community residents.