

Chemical Exposure And Its Impact On The Population

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Introduction

Environmental health centres on the study of the relationship between people and their environment. As a domain of public health, it aims to promote health and well-being, as well as the establishment of safe communities. Environmental health policies are, therefore, aimed at protecting people and ensuring the provision of healthy environments by reducing the impact of chemical exposure in air, soil, water, and food (American Public Health Association, 2021). This essay aims to explore the issue of chemical exposure and its impact on the population. The essay further describes the current policy strategies and their impact on the healthcare delivery system.

Policy Health Issue

The World Health Organization estimates that 24% of global deaths—not 25% of all diseases—are linked to modifiable environmental risks, a category that includes air and water pollution, climate hazards, chemical exposure and other factors. In the US, chemical exposure contributes to major childhood health problems, including asthma, lead poisoning, cancer, and developmental disabilities. Chemical exposure is not limited to a certain place. Rather, it can occur at home, in workplaces, in schools, and across communities. It may be caused by unintentional releases, use of certain domestic products, or contact with hazardous sites. Thousands of chemicals can expose people through food, drinking water and air contaminants. This wide range of exposure makes chemical poisoning a national-level issue (Agency for Toxic Substances and Disease Registry, 2021).

Problem Statement

The roughly \$54.9 billion estimate cited for U.S. childhood environmental disease came from a 2002 study of four conditions—lead poisoning, asthma, cancer and neurobehavioral disorders. It is a historical estimate, not a current annual cost of all chemical poisoning. The issue is further aggravated when exposure occurs within a community. The identification and control of community-related exposure are increasingly difficult. Initially, the presence of hundreds of chemical dumpsites was suspected across the Nation; however, thousands of waste sites were later discovered. These range from accidental spills to dumps and have been associated with risks including miscarriage and low birth weight. Similarly, exposure to toxins such as pesticides or metals such as lead is associated with increased risks of neurodevelopmental disorders, obesity and asthma (Braun, 2016). Chemical

exposure is also associated with gastrointestinal, carcinogenic, dermatological, respiratory and neurological effects, among others (Mnif et al., 2011).

In the United States, regulations against chemical exposure are outlined in the legislature and enforced by the administrative government; however, the problem persists as various concerned personnel evade these regulations through legal and illegal measures (Lynch, 2016). Moreover, the current policy framework is highly fragmented through numerous federal agencies in addition to state-level regulations. This fragmentation and poor policy design result in under-monitoring or an absence of monitoring for many hazardous chemicals (Chiapella et al., 2019). The “Environmental Protection Agency (EPA)” is required to evaluate all new chemicals before their release in the market, however, lack of ample staff and funds hinders the process (Botos, Graham, & Illes, 2019).

Suggestions for Addressing the Health Issue Caused by the Current Policy

To address the health issues caused by the current policy, it is important to understand the right of humans to be free from the risks of these toxins. This right should be enshrined in the policy for clear articulation of goals. Setting ambitious yet realistic policy outcomes is imperative. The evolution of a diverse knowledge base through inclusive and outcome-focused research would promote an in-depth understanding of the complex nature of chemical risks and the socio-technical transformations needed (Chiapella et al., 2019). Lastly, the most important factor for any process is effective governance. Therefore, the current health issues can be addressed through institutions that ensure transparency, inclusion, and accountability.

Steps to Initiate Policy Change

Although policy change does not occur overnight, continuous policy analysis and evaluation are central to identifying gaps and ineffective measures. For matters that concern the health outcomes of the general population, it is important to include nurses and other public health professionals in the policy process. To move towards a regenerative economy that aims to eliminate waste, various stakeholders, including researchers, policymakers, community members, and industries, must collaborate. The first step is problem identification through the evaluation of the current policy. This is followed by recognizing the scope and severity of the problem, along with the monetary implications. The government identifies policy operation through development and strategy, identifies policy jurisdiction, and implementation of administrative measures. Continuous monitoring is conducted for further directives.

Impact on the Health Care Delivery System

Chemical poisoning negatively impacts human health. From slow poisoning resulting from prolonged exposure to rapid poisoning through ingestion of a harmful chemical, the effects are wide-ranging. In a community setting, such exposures can cause infections at a large scale and may range from gastrointestinal problems to respiratory ailments, resulting in increased visits to emergency rooms and hospitalization. Prolonged exposure at the time of gestation can cause developmental delays in children. This would not only require additional treatments during pregnancy but also extensive pediatric care. Moreover, various forms of cancers and neurological disorders may also occur over time among people, increasing the need for hospital admissions. Increased hospital admissions also incur huge amounts of money from state insurers and private insurance organizations. Overall, the healthcare delivery system is burdened due to the increase in demand from healthcare workers. Limited staff and resources ultimately lead to poor quality service delivery (Wang, 2020).

Conclusion

The impact of chemical exposure is one of the most important facets of environmental health. The involvement of all stakeholders in policy change and development is a matter of great urgency to curb its long-ranging impacts on healthcare systems.

References

Agency for Toxic Substances and Disease Registry. (2021). *ATSDR: Safeguarding Communities from Chemical Exposures*. ATSDR.

American Public Health Association. (2021). *Environmental Health*. Retrieved from American Public Health Association: <https://apha.org/Topics-and-Issues/Environmental-Health>

Botos, A., Graham, J. D., & Illes, Z. (2019). Industrial chemical regulation in the European Union and the United States: a comparison of REACH and the amended TSCA. *Journal of Risk Research*, 22(10), 1187-1204.

Braun, J. (2016). Early-life exposure to EDCs: role in childhood obesity and neurodevelopment. *Nature Reviews Endocrinology*, 13(3), 161-173.

Chiapella, A., Grabowski, Z., Rozance, M. A., Denton, A. D., Alattar, M. A., & Granek, E. F. (2019). Toxic chemical governance failure in the United States: Key lessons and paths forward. *BioScience*, 69(8), 615-630.

Lynch, M. J. (2016). *Exploring Green Criminology: Toward a Green Criminological Revolution*. Routledge.

Mnif, W., Hassina, A., Bouaziz, A., Bartegi, A., Thomas, O., & Roig, B. (2011). Effect of endocrine disruptor pesticides: a review. *International Journal of Environmental Research and Public Health*, 8(6), 2265-2303.

Wang, J. (2020). Climate-smart health care: the power of health care action on air pollution and climate change. *European Journal of Public Health*, 30(5).