Hazardous waste and its effects on human health.

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Introduction

Waste is on the agenda of the European Environment and Health Process and will be discussed during the Sixth Ministerial Conference on Environment and Health. Hazardous waste disposal and management are global issues. We used clear and predefined techniques to conduct a systematic review to assess the evidence on the health impact of hazardous waste exposure. The five stages listed below were carried out in accordance with pre-defined methodical criteria. 1. State the research question in terms of "population-exposure-comparison-outcomes" (PECO). Population: persons who live near hazardous waste sites; Exposure: people who have been exposed to hazardous waste; Comparators: all comparators; Outcomes: all diseases/ health conditions. 2. Conduct a literature search using Medline and EMBASE. 3. Include authentic epidemiological research published between 1999 and 2015 on people exposed to hazardous waste in their homes. 4. Evaluate the quality of chosen studies by considering research design, exposure and outcome measurement, and confounding control. 5. Rate your level of confidence in the body of evidence for each outcome, taking into account the dependability of each research, the strength of the link, and the consistency of results. For the evidence review, 57 publications from epidemiological studies on the health of communities living near hazardous waste sites were chosen. The study looked at the relationship between 95 health outcomes (diseases and disorders) and residential exposure to hazardous waste sites. The hitherto undiscovered health implications of household hazardous waste exposure were emphasised. There is sufficient evidence of a link between exposure to oil industry waste that contains high amounts of hydrogen sulphide and acute symptoms. The evidence of a causal relationship with hazardous waste was defined as limited for the following health outcomes: liver, bladder, breast, and testicular cancers, non-Hodgkin lymphoma, asthma, congenital anomalies overall and anomalies of the neural tube, urogenital, connective, and musculoskeletal systems, low birth weight, and pre-term birth; evidence was defined as insufficient for the other health outcomes. The findings, while not definitive, suggest that more effective public health policies on hazardous waste management are urgently needed. International, national, and local governments should oppose and eradicate inadequate, outmoded, and illegal waste disposal methods, including unlawful transboundary trafficking, and strengthen regulation and enforcement.

Effects on human health

In different nations, the word "hazardous" waste is used differently, informally denoting non-household garbage that contains dangerous compounds. We included the phrases "hazardous," "toxic," and "industrial" waste in our search literature, eliminating publications regarding municipal landfills, which have no records of hazardous materials, incinerators, e-waste, and radioactive waste disposals. The current review excludes occupational studies. Waste, particularly hazardous waste, is one of the World Health Organization's (WHO) Regional Office for Europe's priority topics, and it was on the agenda of the Sixth Ministerial Conference on Environment and Health. Waste disposal and management are global issues. Poor, outmoded, and illegal urban and hazardous waste disposal procedures harm local populations in practically every country; this includes unlawful transboundary trafficking, primarily from developed nations. The burden of illnesses caused by waste-related exposures is growing in middle-low income nations and is not being adequately addressed.

"Despite methodological limitations, the scientific literature on the health consequences of landfills gives some evidence of the relationship between dwelling near a landfill site and poor health outcomes," the WHO study on waste and health stated. The data, while slightly greater for reproductive outcomes than for cancer, is insufficient to prove causation. However, given the high proportion of the population potentially exposed to landfills in many European nations, as well as the research' poor power to detect an actual danger, the possible health effects cannot be disregarded." The Report is concerned with landfills in general, not especially with hazardous waste management; nevertheless, several case studies address this topic, and guidelines for study design are offered.

A rigorous process was employed for systematic and a priori criteria-based evaluations. The application of "reliability" criteria based on bias risk to observational research necessitates considerable thought. Exposure and outcome assessment techniques, confounding control, and research design were all assessed to assess the quality of the results and their likelihood of bias. Because of the so-called "ecological fallacy" (interpreting connections at the aggregated level as causality at the individual level), the majority of the selected research were ecological, a design that is widely viewed as weaker than individual-level studies. The evidence of a link between general and neurological acute symptoms, particularly those affecting the otolaryngological, respiratory, digestive, and cutaneous systems, and exposure to oil industry waste containing high amounts of hydrogen sulphide, was deemed significant. This assessment was based on two cross-sectional investigations conducted in the Abidjan population near areas where about 500 tonnes of hazardous material were illegally deposited and subsequently produced hydrogen sulphide into the air. Contaminants emitted or produced by hazardous waste may have a role in the incidence of illnesses with multi-factor aetiology, although proof of a relationship, as in the case of liver cancer, was lacking. In the aforementioned evaluation of municipal waste management, the

relationship between liver cancer and landfills was deemed to have insufficient evidence.

The primary known risk factors for liver cancer include hepatitis B and C viruses, alcohol intake, cigarette smoking, and aflatoxins. IARC determined that exposure to vinyl chloride and 1,2-dichloropropane was related with liver cancer based on sufficient evidence. The evidence for a link between arsenic and its inorganic constituents, DDT, dichloromethane, and trichloroethylene was deemed insufficient. Even though B or C hepatitis chronic viral infection is linked with 80–95 percent of hepatocellular carcinomas worldwide, an interaction between chemicals and the other risk factors, namely occupational exposure to vinyl chloride monomer (VCM) and hepatitis B virus infection, has been proposed.

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