

Environmental Toxins and Criminal Behavior

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Global poverty remains a significant social burden and impacts many aspects of human society and well-being. Despite considerable progress in reducing absolute poverty under the United Nations Millennium Development Goals (MDGs), millions of individuals worldwide still live in or near poverty (Anser et al., 2020). Efforts to build on the progress of the MDGs were brought together in 2015 with the signing of the Sustainable Development Goals (SDGs) by all members of the United Nations. The SDGs are a set of 17 targets countries intend to achieve by 2030. These targets include eradicating poverty, universal access to clean drinking water and clean air, and achieving peace and justice. Many of these targets share root causes and are interrelated in complex social, economic, and cultural ways, including the influence of poverty on the relationship between environmental pollution and criminal behavior.

Criminal and anti-social behaviors are a product of many sociocultural and genetic variables. However, literature has also established a link between environmental pollution, or exposure to environmental toxins, and the development of criminal behaviors (Haynes et al., 2011). Researchers have linked exposure to lead and manganese to neurological deficits during early childhood development, which has, in turn, been associated with increased aggressive and criminal adolescent and adult behavior. Neurol deficits have also been linked to exposure to arsenic, chromium, cadmium, and mercury (Narag et al., 2019). Research has also established poor air and water quality to early childhood developmental deficits, again being associated with anti-social and aggressive behavioral outcomes later in adolescence and adulthood (Haynes et al., 2011). All these metal and environmental exposures result from numerous anthropogenic activities and have well-established health consequences beyond early childhood neurological deficits and neuroinflammation.

Environmental toxins in the air and drinking water have been reported across many sections of society. However, ample empirical evidence indicates a disproportionate environmental toxin exposure burden is borne by communities that live in poorer socioeconomic regions of the world, including in the United States (Anser et al., 2020). Many factors contribute to such outcomes, including industrial zoning decisions that place polluting factories near poorer residential communities. This suggests that children born in impoverished communities are at risk of disproportionate exposure to toxic metals and other fine particulate matter. Given that poverty severely constrains access to upwards social mobility, these children are likely to grow up with higher levels of toxins in their bodies, causing a range of neurological deficits in IQ and other cognitive abilities. These have been linked with outcomes such as higher rates of Attention Deficit Hyperactivity Disorder (ADHD), impulsive-compulsive behaviors, poor school performance, aggression and irritability, and other anti-social tendencies (Haynes et al., 2011). As such, growing up in poverty can mean individuals with significant biological deficits are at dramatically increased odds of engaging in anti-social behaviors during adolescence and young adulthood. These individuals are more likely to be in and out of the criminal justice system, be criminally victimized, and be at risk of premature mortality.

In the United States, there has been a strong focus on the impacts of lead exposure on health and social outcomes, especially lead exposure from pipes and in the drinking water of many counties around the country. Although medical science has yet to provide a clear causative mechanism for how exposure to lead and other metals early in childhood leads to neurological deficits, several experts and scholars agree the outcomes have been disastrous. An estimated 40% of the delinquencies in the United States, and anywhere between 10 to 35% worldwide, are attributable to high lead exposure (Anser et al., 2020). In addition, reductions in lead exposure in

the United States beginning in the late 1970s were correlated with declines in criminality and violence in the 1990s when babies born in the 70s started to reach young adulthood.

Retrospective observations such as these have been reported in many other countries around the world and burnish the evidence of the anti-social, cognitive impacts of environmental toxins and the subsequent risk of engaging in criminal behavior (Anser et al., 2020).

The factors that drive poverty and economic inequity include many facets of modern capitalist society that are both inherently difficult to resolve and a consequence of public policy decisions at various levels of power hierarchies. One consequence of income inequality and poverty is the inability to address environmental challenges meaningfully. Industrial zoning decisions may place polluting factories near impoverished neighborhoods, with little recourse for members of such communities to challenge polluting activities due to financial and social constraints. It is imperative to address such dynamics if the SDGs of eradicating poverty and delivering peace and justice are to be realized by the end of the decade. Policymakers must tackle income inequality, invest in poorer neighborhoods, effectively regulate industrial activities, and provide pragmatic opportunities for upward social mobility to all global citizens. Such policy decisions will challenge existing power hierarchies by mobilizing collective sociopolitical will (Nurse, 2017).

More meaningful environmental policy choices, such as banning the sale of new combustion engine motor vehicles or replacing traditional industrial processes with still expensive alternatives, can create even greater environmental benefits and further reduce the risk of exposure to harmful toxins. However, such decisions must be made while ensuring economic growth and prosperity in regions of the world that are less developed. A policy framework that considers such choices is necessarily nuanced (Nurse, 2017). Less developed countries and

poorer regions must be allowed to grow their economies but not at the expense of early childhood health, which increases the risks of anti-social and criminal behaviors.

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