Health and Environmental Risks of Gas Stations

Extensive research demonstrates that gas stations pose significant health and environmental risks to nearby communities. Gasoline releases volatile organic compounds (VOCs), most notably benzene—a confirmed human carcinogen.

Several case-control and registry studies, including one in Northern Italy, have found that children who live near petrol stations have a substantially higher risk of developing childhood leukemia, especially acute lymphoblastic leukemia. Other studies similarly link residential proximity to sources of benzene (traffic, gas stations) with increases in respiratory illness, asthma flare-ups, and reduced lung function among children.

The risks also extend to workers. A study of 150 gasoline station workers (fueling workers and cashiers) showed that over 70% face elevated lifetime cancer risk attributable to benzene exposure, and more than half show non-cancer health risk (hazard quotients above safe thresholds). Chronic exposure has also been associated with neurological issues, reproductive harm, and immune system impairment in more limited studies.

Environmental hazards present further concern. Decades of data on leaking underground storage tanks in the U.S. indicate widespread contamination of soil and groundwater, including drinking water sources, with fuel components such as benzene. These leaks degrade environmental quality and can depress property values in affected neighborhoods.

Even under modern safety regulations, benzene emissions can travel significant distances. Some studies indicate that emissions from petrol stations and traffic sources can affect air quality and health outcomes hundreds of meters from the source, meaning many existing zoning rules may not offer sufficient protection. (Implication drawn from the buffer analyses in proximity studies.)

This body of evidence shows that both living and working near gas stations are associated with increased risks of cancer, respiratory disease, and long-term environmental harm.

References

1. *Risk Assessment on Benzene Exposure among Gasoline Station Workers.* MDPI / International Journal of Environmental Research and Public Health: Analysis of 150 workers, reporting >70% have elevated lifetime cancer risk due to inhalation exposure. (PubMed)
2. *Residential Proximity to Petrol Stations and Risk of Childhood Leukemia.* European Journal of Epidemiology (Italy): 182 childhood leukemia cases vs matched controls; elevated risk linked to living <50 m from petrol station and volume of fuel sold nearby. (PubMed)
3. *Leukemia Risk in Children Exposed to Benzene and PM_{10} from Vehicular Traffic.* Eur J Epidemiol 2012: shows benzene exposure from traffic correlates with leukemia risk in young children. (PubMed)

4. *Occupational Exposure of Gasoline Station Workers to BTEX Compounds in Bangkok, Thailand.* Examines benzene and related VOC exposures, with lifetime cancer risk estimates. (PubMed)
5. *Tank Leaks and Environmental Risk from Underground Storage Tanks.* U.S. EPA/GAO reports on leakage from underground fuel tanks contaminating groundwater and public drinking water sources. (Government Accountability Office)
6. *Cytogenetic, Hematological, and Immune System Effects in Gas Station Attendants.* Case reports showing immune & reproductive/genetic impacts in workers with prolonged BTX exposure. (BioMed Central)