NEGATIVE IMPACTS OF ENVIRONMENTAL FACTORS ON THE HEALTH OF FREQUENTLY ILL CHILDREN

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Annotation: This scientific article provides comprehensive information on the impact of environmental pollution on children's health. Pollution of the environment—particularly air, water, and soil—can weaken children's immune systems and contribute to respiratory diseases, allergies, and other chronic illnesses. The article discusses scientific research findings on these environmental effects and offers recommendations for mitigating their negative impacts.

Key words: Children's health, environmental pollution, air quality, water quality, soil pollution, immune system, respiratory diseases, allergies, chronic diseases.

Introduction: In today's era of advanced science and technology, the biosphere is becoming increasingly polluted. As a result, humans are often forced to live under unfavorable ecological conditions shaped by various global, regional, and local geoecological problems. Pollution and degradation of air, water, soil, and food products are leading to the spread of diseases, reduction in life expectancy, and higher mortality rates—especially among infants. In essence, while humanity continues to develop industrial power, it often neglects to understand the environmental and socio-economic consequences of such progress [1].

Main Part: Impact of Environmental Pollution on Children's Health:

Air Pollution: Harmful substances in the atmosphere—such as sulfur dioxide, nitrogen oxides, and carbon monoxide—can lead to respiratory illnesses, asthma, and allergic reactions. Studies show that air pollution is responsible for 31% of global deaths caused by lung diseases.

- Respiratory diseases: Dust and chemical pollutants cause bronchitis, asthma, and difficulty breathing in children.
- Chronic lung diseases: Long-term exposure to polluted air impairs lung development.
- Weakened immunity: Air pollutants lower resistance to infections.

Water Pollution: Chemicals and microorganisms in drinking water can cause gastrointestinal disorders, skin and eye infections, and more. Contaminated water with heavy metals may impair brain development in children.

- Intestinal infections: Pathogens in dirty water cause diarrhea and dehydration.
- Cancer risks: Heavy metals like lead and mercury affect the nervous system and developmental processes.
- Skin diseases: Chemical pollutants in water cause eczema and dermatitis.

Soil Pollution: Chemicals and heavy metals in soil negatively impact children's growth. Direct contact during play can result in skin or respiratory exposure to toxic substances.

- Toxic exposure: Pesticides and chemicals cause poisoning.
- Developmental problems: Lead and cadmium affect brain function and concentration.
- Chronic diseases: Pollutants entering the food chain can cause long-term illnesses.

Preventive Measures: To protect children's health, it is essential to safeguard the environment. Actions include reducing pollution, adopting eco-friendly technologies, promoting ecological awareness, and encouraging healthy lifestyles.

Effects of Environmental Hazards on Frequently Ill Children:

1.Respiratory diseases: Air pollution triggers asthma and bronchitis. Second-hand smoke is particularly harmful.

2. Weakened immunity: Chemicals and toxins weaken immune defenses, leading to frequent infections.

3. Allergic reactions: Air, soil, and water pollution causes skin allergies, eczema, and itching.

4. Chronic diseases: Heavy metals in water impair brain development and learning. Long-term exposure also increases cardiovascular disease risk.

5. Cancer risk: Carcinogens in soil and air (e.g., pesticides, formaldehyde) increase tumor risk.

6. Psychological and physical development issues: Environmental stressors (noise, poor living conditions) contribute to anxiety and sleep disorders. Lead exposure can reduce IQ.

7. Infectious diseases: Microbes in water and soil cause gastrointestinal infections. Poor sanitation exacerbates outbreaks.

8. Digestive system issues: Chemical contaminants lead to ulcers and liver diseases. Dirty water causes diarrhea and dehydration.

9. Increased child mortality: Pneumonia and respiratory illnesses contribute significantly to child deaths globally.

2023 Statistics on Environment-Related Diseases in Children (Uzbekistan Ministry of Health):

Type of Disease	Number of Affected Children	Share of Total (%)
Respiratory diseases	12,500	40%
Allergic reactions	7,500	24%
Gastrointestinal diseases	5,000	16%
Skin diseases	3,750	12%
Other diseases	2,500	8%

According to the statistical data of the Ministry of Health of the Republic of Uzbekistan, 2023: As shown in this table, respiratory diseases are the most common among children due to environmental factors, accounting for 40% of overall illnesses. Allergic reactions rank second at 24%. Gastrointestinal diseases make up 16%, skin diseases 12%, and other illnesses 8%.

These data indicate that environmental pollution significantly affects children's health. Therefore, it is necessary to strengthen measures to protect the environment and safeguard children's health.

Currently, a number of specific environmental problems may hinder human health and well-being. These problems include chemical pollution, air pollution, climate change, disease-causing microbes, and poor water quality. A study of the pollution levels of air, water, soil, and the environment in general by industrial enterprises in the country reveals that by the end of the 1990s, 87.2% of Uzbekistan's national economy enterprises did not meet ecological and hygienic standards and were sources of environmental contamination. As of today, 35% of industrial enterprises are considered environmentally clean, while 296 enterprises (29%) are regarded as highly hazardous from an ecological perspective. Waste emissions from these enterprises lead to concentrations of pollutants in residential areas that exceed the permissible norms by 5% or more.

In 2019, when the sanitary-epidemiological service registered enterprises polluting the atmosphere, it was found that 287 enterprises lacked the required sanitary-protection

zones and had outdated technologies, with ineffective or absent dust and gas filters. As a result, air pollution remains high in 18 cities of the Republic.

Chemical pollutants can affect human health through various pathways, often causing vulnerabilities to diseases when exposed to dangerous or foreign substances. According to the World Health Organization (WHO), more than 1.7 million deaths in 2022 were caused by exposure to selected chemical substances. Examples of hazardous environmental chemicals include heavy metals and toxins entering water supplies and harmful pesticides contaminating the food chain.

Figure 1.1. Environmental Pollution

According to UN statistics, the urban population has doubled since 1950. Current estimates show that due to population growth and urban migration, the number of slums increases by 10–15% annually. Harsh conditions lead to physical overload, stress, depression, violence, and diseases. According to recent statistics from the UN and the World Bank, in about half of the countries in Africa and Southeast Asia, with a combined population of nearly 2 billion, the average annual per capita income is less than $300. Widespread poverty in developing countries leads to hunger, undernutrition in many children, and in some cases, death. At best, children grow up physically and mentally impaired.

It is also important to remember that manufacturers play a crucial role in the economy and should be encouraged to produce goods that minimize waste after use.

Figure 1.2. Leading Causes of Death in Uzbekistan

These factors affect people's lifestyles. Health is determined approximately 50% by lifestyle, 15–20% by environmental conditions, 15–20% by heredity, and 10% by healthcare services and institutions.

The concept of health is closely linked to the idea of wellness. In the 1980s, WHO experts defined the approximate proportion of various factors affecting modern human

health. These conclusions were later confirmed for our country as well (WHO data in parentheses):

- Genetic factors – 15–20% (20%)
- Environmental conditions – 20–25% (20%)
- Medical care – 10–15% (7–8%)
- Living conditions and lifestyle – 50–55% (53–52%)

Factors Affecting Human Health:

- **Genetics (15–20%):** Inherited health, genetic predisposition to disease.
- **Environmental Conditions (20–25%):** Good living and working conditions, favorable climate and natural environment; vs. harmful working/living conditions, ecological degradation.
- **Medical Care (10–15%):** High-quality screening and prevention, timely and comprehensive treatment; vs. lack of monitoring, poor quality care.
- **Lifestyle (50–55%):** Rational organization of life, physical activity, social/psychological comfort, balanced diet, absence of bad habits, health education; vs. lack of order, sedentary life, poor diet, harmful habits, inadequate knowledge.

A risk factor is a condition or feature that is not a direct cause of a disease but increases its likelihood. These may include lifestyle factors or inherited traits. WHO identifies biological, ecological, and social risk factors. If direct causes of diseases are combined with risk factors, they are referred to collectively as health factors and are categorized similarly.

Biological risk factors include genetically and developmentally acquired traits.

Recommendations:

Reducing Air Pollution:

- Use of clean energy sources: Transition from coal and harmful fuels to solar and wind energy.

- Modernization of transportation: Promote electric vehicles and reduce use of internal combustion engines.
- Anti-pollution filters: Install equipment in enterprises to filter pollutants.

Preventing Water Pollution:

- Drinking water purification: Implement modern systems and ensure clean water in polluted areas.
- Improve sanitation: Develop infrastructure to meet hygiene standards.
- Manage solid waste: Strictly control chemical and solid waste disposal in water bodies.

Reducing Soil Pollution:

- Limit chemicals: Reduce use of pesticides and chemical fertilizers; promote organic farming.
- Improve sanitation infrastructure: Develop waste recycling systems and prevent pollution.

Strengthening Children's Immune Systems:

- Proper nutrition: Provide children with nutritious, vitamin-rich food.
- Preventive vaccination: Regular immunization against infectious diseases.
- Promote healthy lifestyles: Encourage physical activity, hygiene, and clean environments.

Educational Campaigns:

- Raise public awareness of environmental risks and teach protective measures.
- Develop environmental education: Introduce environmental and ecology lessons in schools.

Create Safe Spaces for Children:

- Playgrounds and green areas: Establish safe and eco-friendly play areas.
- Reduce poisoning risks: Secure areas where toxic substances are stored.

Conclusion:

Air pollution poses a serious threat to children's health:

- Developing respiratory systems are vulnerable to air pollution, leading to bronchitis, asthma, and chronic lung conditions.
- Polluted water leads to gastrointestinal diseases and infections.
- Contaminated water with chemicals and microbes causes diarrhea and dehydration, increasing mortality among young children.
- Environmental noise and radiation damage mental health—noise disrupts sleep and causes stress; radiation negatively affects school performance.
- Environmental factors worsen allergic reactions—dust, mold, and plant pollen lead to asthma, eczema, and other conditions.
- Frequent illness among children lowers school performance—health issues impair physical, mental, and cognitive development, hindering academic success.

Improving children’s health is possible through environmental protection, adherence to hygiene, defense against ecological hazards, and increasing public environmental awareness.

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