

Environmental Health

The quality of the indoor air is one of the major issues related to public health, education and learning outcome, and productivity. Poor indoor air quality results in health problems, lost productivity, expensive maintenance and repair, and legal issues. Mild health issues are increased allergy and asthma. More serious health impacts with fatal implications are carbon monoxides poisoning, lung cancer, and Legionnaires' disease.

A major problem associated with building poor indoor air quality (IAQ) is the excessive level of moisture within the building envelope. Construction defects such as roof and slab cracks and window leakages result in penetration of moisture and rain into the building envelope and mold growth, causing major adverse health impacts. Accumulation of dirt and moisture inside the HVAC system and circulation of particulates within the building results in increased allergies and respiratory and pulmonary diseases.

Nitrogen Oxides (NO_x) are one of the main ingredients involved in the formation of ground-level ozone, which causes respiratory problems. It forms when fuel is burned at high temperatures. The primary sources of NO_x are motor vehicles, power plants, and industrial and residential activities that burn fuels.

Problems associated with NO_x are not confined to source areas. NO_x travels over prevailing winds and thus affects all populations exposed. Strategies for attaining clean air include NO_x emissions reduction.

CEERS environmental health research and development activities are focused on conditioned and healthy enclosed and open spaces, emissions diffusion and concentration, indoor pollution and mitigations, impacts of pollution and particulates on human health, and systems optimization. Recent research and ongoing projects are on virus transport aboard public transportation systems, particulate depositions and impacts on cardiovascular systems, manufacturing activities, and indoor air quality. Additional projects are the reduction of NO_x emissions of diesel and compressed natural gas engines.