

## **Report 57: Healthy Buildings and Communities**

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### **Brief History:**

The group identified several factors that make buildings and communities timely and important topics of environmental health research and capacity-building:

1. People spend the vast majority of their time in buildings, transportation infrastructure, and community settings.
2. The depressed economy has resulted in a great deal of deferred maintenance and substandard building conditions, which may threaten health.
3. The depressed economy has created a backlog of building demand; with economic recovery, there will be a substantial increase in building.
4. Similarly, the growing population (an estimated 100 million more Americans in the next 40 years) will create the need for extensive new building.
5. The advent of “green” building techniques, including new energy technologies, new building materials, and other innovations, will pose new exposures, which may have health implications.
6. Organizations active in design and building are eager to access health expertise, to enable them to reduce liability and create healthy places.
7. Major causes of morbidity and mortality, such as heart disease, cancer, asthma, and mental illness, all have plausible links to the built environment. If NIEHS places a priority on high-impact conditions, then the built environment is an essential focus of attention.

### **Recommendations:**

#### Definition and scope

1. NIEHS should move toward a **broad, integrative view of human health** and well-being, using a contextual and systems approach. This means supplementing conventional biomedical, toxicological approaches with consideration of the whole person in the whole environment. The environment should be defined to include far more than the chemicals to which people are exposed; it should include the settings in which people spend time, and the infrastructure (buildings, roads, parks, etc.) that form those settings.
2. Similarly, NIEHS should consider not just toxic hazards, but also **environmental approaches to health promotion**, such as the design of healthy places.
3. Because architecture, building science, city planning, transportation planning, and landscape architecture create the environments that people inhabit, NIEHS should define these fields as

highly relevant to environmental health, and should support research and capacity-building that extend to these domains.

4. The “built environment” should also be considered to include **contact with nature** e.g. access to natural daylighting, parks, and greenspaces, since data suggest that these features may offer health benefits.
5. In addition to design and construction of the built environment, NIEHS should define **operation and maintenance** as part of its environmental health approach. Examples include cleaning materials and procedures, and HVAC system maintenance, which have clear potential impacts on human health.
6. The **economic impact** of the built environment on health is likely to be considerable, but needs much more study and quantification. NIEHS should include economic analysis in its approach to buildings and communities.

#### Programmatic recommendations

7. NIEHS should take a **leadership position** in studying health implications of building and community environments.
8. Understanding that large-scale funding and program-building are not feasible, NIEHS should establish a **focal point** within the Institute to lead this work, to identify collaborative and leveraging opportunities, and to guide program development over time. The small but effective Climate Change effort was cited as an example.
9. In pursuing this work it is essential that NIEHS **partner with other entities** to develop this research and capacity-building. While no other agency is in a position to lead, other agencies do have much to contribute—CDC’s National Center for Environmental Health its applied public health approach, HUD its housing and urban planning expertise and industry partnerships, DoT its transportation expertise and industry partnerships, and NGOs and associations such as the American Institute of Architects and the US Green Building Council their extensive hands-on experience and expertise. In particular, NIEHS should lead HHS engagement with the Sustainable Communities Initiative (HUD, EPA, and DOT) since health considerations are regrettably absent from this effort.
10. Within NIH, NIEHS leadership should involve **partnering with other Centers and Institutes**. For example, NIEHS could partner with NIMH to explore mental health impacts of building design, with NCCAM to explore the benefits of nature contact, and/or with NHLBI to explore the health benefits of community design that promotes physical activity.
11. NIEHS should consider requiring involvement of researchers with design and construction expertise in certain grant-funded projects, analogous to the way the Children’s Environmental Health Research Centers require basic science expertise.

12. NIEHS should focus on building materials that may expose occupants to chemical hazards, including both conventional materials and emerging new materials (an especially important category given the emergence of innovative “green” materials). NTP should prioritize chemicals that are found in substantial quantities in building materials, given the large potential for exposure.
13. NIEHS should prioritize those buildings and community settings in which at-risk populations spend considerable time, such as child care centers, schools, old-age homes, health care facilities, and low-income housing. Environmental hazard identification and control, and environmental health promotion, can yield considerable population health benefits in such settings.
14. NIEHS should consider awarding prizes or other forms of recognition to researchers who produce important findings that advance health at the scale of buildings or communities, and to buildings and communities that effectively incorporate health promotion and protection into their design and operation.

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