CHAPTER 2

VISION AND GOALS

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VISION

STRATEGIES

- Leveraging Action Through Partnerships
- Encouraging New Technologies
- Market Incentives
- Research and Development
- Legislation, Policy, and Standards
- Education and Information

All across our nation, people live, work, and learn in healthy indoor environments. The environments inside our buildings help us reach our full potential for good health and productivity. No one is excluded: we create healthy buildings at every income level and help all our children grow up to be healthy adults. We understand the importance of healthy indoor environments, create a demand for them, and expect them as something that everyone deserves. By choosing designs, ventilation systems, materials, and products wisely, we are able to create healthy buildings while substantially reducing energy use, cutting materials costs, and raising productivity. The Nation's success in improving human health indoors serves as a model for better building design and construction, rehabilitation and maintenance, and product development around the world.

GOALS TO ACHIEVE THE VISION

Our Objective: To Achieve Major Human Health Gains Over the Next 50 Years By Upgrading Indoor Environments.

GOAL 1:

Achieve Major Health Gains and Improve Professional Education

- Known risks from indoor environments are effectively addressed, leading to significant health gains in many areas, including:
  - Avoidance of excess lung cancer deaths caused by exposure to radon, ETS, and asbestos.
  - Avoidance of excess cancer deaths caused by indoor exposure to volatile organic compounds and other chemicals.
  - Avoidance of delays in physical and mental development in children, lowered IQ levels, shortened attention spans, and behavioral problems associated with elevated blood lead levels.
  - Avoidance of excess deaths, illness, and lost school/work time from asthma and other respiratory diseases; improved comfort for the estimated 17 million Americans who have asthma, and many of the more than 50 million who suffer from allergies.
  - Significant reductions in the spread of infectious diseases, such as tuberculosis, Legionnaires' disease, and influenza.
  - Significant reductions in other health effects, including eye, nose and throat irritation, headaches, fatigue, loss of coordination, nausea, developmental and reproductive damage, and damage to the liver, kidneys, and central nervous system.
  - Major productivity gains from improvements in worker and student performance.
- The most important risks posed by indoor environments are identified and quantified, and communicated in an appropriate manner for the general public; risks from interactions of toxins and cumulative low-level exposures are clarified.

GOAL 1: Achieve Major Health Gains and Improve Professional Education

GOAL 2: Foster a Revolution in the Design of New and Renovated Buildings

GOAL 3: Stimulate Nationwide Action to Enhance Health in Existing Structures

GOAL 4: Create and Use Innovative Products, Materials, and Technologies

GOAL 5: Promote Health-Conscious Individual Behavior and Consumer Awareness

- Information about indoor health risks and healthy indoor environments is fully integrated into professional curricula and the training and practice of health, science, manufacturing, and building professionals.

GOAL 2:

Foster a Revolution in the Design of New and Renovated Buildings

- The planning and construction of nearly all new buildings is based on an integrated design[1] process that looks at whole-building systems and seeks out least-cost strategies for simultaneously achieving health-enhancing indoor environments, efficiency in the use of energy and materials, high functionality, comfort, and productivity.
- New buildings with health-enhancing indoor environments and high energy efficiency cost no more to own and operate than conventional buildings, and often cost less.
- Cost-effective building rehabilitation, renovation, and remodeling strategies have been developed that address all major identified risks in the indoor environment.
- Residential and non-residential rehabilitation, renovation, and remodeling projects are undertaken using integrated design processes and achieve large improvements in indoor environmental quality, energy efficiency, and productivity.
- The great majority of new and renovated buildings are designed for easy maintenance with low-impact products and procedures.

GOAL 3:

Stimulate Nationwide Action to Enhance Health in Existing Structures

- Guidelines for healthy building operation, maintenance, renovation, and remodeling are developed and routinely followed in commercial and office buildings.
- Standards of care and livability are developed and routinely followed in residential rental buildings.
- Building managers and engineers, maintenance and custodial workers, trash handlers, recyclers, renovators, and others who contribute directly to maintaining clean, healthy indoor environments have proper training and the capability to carry out their work.

GOAL 4:

Create and Use Innovative Products, Materials, and Technologies

- Building materials and consumer products that pose potential health and environmental risks are subject to standardized, life-simulation tests.
- An easily understood "green labeling" system has been developed that allows consumers to assess health risks and make informed choices among building materials and consumer products used indoors.
- Low-toxicity, resource-efficient products are widely available in all indoor product areas and usually cost no more than conventional products.
- Low-cost testing kits and sensors for detecting exposure to a wide range of indoor pollutants and assessing personal risks are available to all.

GOAL 5:

Promote Health-Conscious Individual Behavior and Consumer Awareness

- Everyone is aware of the importance of indoor environments for maintaining and enhancing health. Indoor environmental quality is seen as just as important to health as environmental quality outdoors.
- Nearly everyone is familiar with how to access information about indoor environments, including information on health effects, environmental impacts, pollution prevention strategies, integrated building design, and indoor enviro-friendly products.
- Information is easily available and useful to the general public (including access in multiple languages) and to all relevant constituencies, including building professionals, product manufacturers, and health professionals.
- Nearly all involuntary exposure to ETS has ceased, so that it is no longer a significant health threat.
- The great majority of homeowners, tenants, and landlords significantly reduce exposure to indoor pollutants and irritants by practicing good building maintenance, e.g., controlling moisture problems, exterminating cockroaches and other vermin, changing air filters, and testing for radon, lead, asbestos, carbon monoxide, and other toxics.
- More informed consumer product purchasing and use has led to a substantial reduction in health risks associated with cleaning, painting, lawn and garden care, and other aspects of personal behavior in home environments.

PRINCIPLES FOR THE FUTURE

Whole-Systems Thinking

From the smallest home to the largest office building, we will improve indoor environments through an integrated design process that looks at the building life cycle, whole-building systems, and the leverage points where individual expenditures can generate multiple benefits. A whole-systems perspective that evaluates the building, including its site, heating, ventilating, and air-conditioning (HVAC) systems, materials, finishes, carpets, paints, appliances, and equipment, is the key to implementing the least-cost design and remodeling.

Protecting Our Children

We will create indoor environments that are healthier for everyone by making indoor environments safer for the most vulnerable among us, especially children. Improving indoor environments is critical to children's health and lays the groundwork for healthier generations to come.

Environmental Justice

Some population groups—usually low-income people, and often minorities—are exposed to a disproportional amount of environmental hazards both indoors and outdoors, at home and at work. Economically disadvantaged people often have fewer chances to improve their housing or workplace conditions. Environmental justice requires that we make extra efforts to ensure that these groups are equally protected.

Right-To-Know

Citizens have a right to know what is in their environment and how it affects them. This allows them to make informed choices to protect themselves from environmental health threats. This principle applies to indoor environments just as much as to outdoor ones. It will become increasingly relevant as low-emission products and low-cost indoor testing and sensor technologies are marketed.

ENHANCING HEALTH

Indoor environmental conditions can lead people to under-perform and to feel less than their best without producing overt symptoms of illness. Efforts to improve indoor environments should not only prevent illness, but also aim to enhance health, vitality, and productive activity.

GOOD SCIENCE

Strategies for improving indoor environments need to be based on scientific facts. We need a better understanding of indoor sources, people's exposure in various indoor environments, how those exposures affect health and productivity, and how they can be minimized by prevention-oriented, least-cost strategies. We also need to know more about the relationships between pollutant levels and building characteristics, operation and maintenance, and furnishings.

POLLUTION PREVENTION/HEALTH PROMOTION

Preventing indoor environmental problems from occurring in the first place is far more cost-effective than remediating problems and treating illnesses after they occur. The key to stopping the escalation of health care costs is to "design out" the conditions which cause illness, including unhealthy environments in homes, schools, and workplaces.

IMPORTANCE OF WIDESPREAD UNDERSTANDING

Indoor environmental quality is the sum total of decisions made by an enormous variety of individuals and institutions, including architects and builders; bankers and real estate agents; academic scientists and medical professionals; national, state, and local governments; building owners and managers; product manufacturers and retailers; janitors and sanitation workers; employers and unions; parents; consumers; and others. We can improve indoor environments faster if all these parties become more knowledgeable, so that the impetus for change emerges from all sectors.

Creative Partnerships

Improving human health indoors requires a new level of systematic cooperation among disciplines, as well as the many public, private, and voluntary organizations whose activity affects indoor environments. Partnerships among disciplines are critical for whole-systems thinking and integrated design. Partnerships between government and business can bolster research efforts and speed the emergence of profitable solutions. Partnerships among federal, state, and local governments can accomplish far more than federal action alone. Such creative linkages are key to improving indoor environmental quality and lowering health risks.

Federal Integration and Leadership

Improving indoor environments requires better coordination within and among federal government agencies to align efforts and set clear roles for each organization. New efforts will be required within EPA to span internal boundaries and collaborate more effectively with other agencies.

The federal government can lead by example and through implementing strategies that empower others. Key areas for federal action include constructing facilities that are models of IEQ and developing criteria and management systems for IEQ that provide examples for other agencies. (EPA specifically considered IEQ as it designed and constructed its new research facility in Research Triangle Park, NC and continues to consider the impacts on IEQ as it makes decisions about products and materials to be used or installed in the building.) The federal government can also enable other stakeholders, using strategies such as supporting research and development, providing information, stimulating the marketplace through purchasing, and setting standards or encouraging efforts to develop standards within the private sector.

RESOURCE AND ECONOMIC EFFICIENCY

Strategies for improving indoor environments can be designed to promote economic efficiency, spur technological innovation, and benefit business, while promoting public health at the same time. Choosing designs, materials, and products wisely will create healthy indoor environments while simultaneously improving efficient use of energy and materials. Energy use can be reduced through more efficient building envelopes, glazings, and lighting systems. The need for materials can be reduced by minimum-materials design, minimum-toxicity components, improved durability, more flexible building design (so buildings do not have to be replaced when their use changes), and more extensive recycling and reuse of building materials. Technologies to use water more efficiently can also play an important role in areas where water supplies are limited. Money can be saved by downsizing HVAC equipment, reducing material costs, and cutting operating expenses for heating, cooling, and lighting. Small businesses may require special strategies to enable them to stay competitive and improve indoor environments.

INTERRELATIONSHIP OF INDOOR AND OUTDOOR ENVIRONMENTS

We need to take into account the relationship between indoor and outdoor environments. Some health endpoints, like asthma, are impacted by both, and the contribution of each is not separable. Designs for healthy buildings should include energy-saving landscaping and should be tailored to deal with the special problems posed by regional climates and local conditions. Healthy indoor environments are easier to achieve when outdoor environmental quality is high, because what comes in from the outside affects the indoors.

GOALS AND MEASUREMENTS

Clear goals and measurements of movement toward them must be set. Appropriate measurements of success are essential for tracking and demonstrating progress, evaluating programs, and directing strategies.

END NOTE

[1]Integrated design looks at all the parameters of a building, including its site, over its lifetime, and finds the maximum balance between good IEQ, energy efficiency, comfort, and materials use.