

## EPA CORE PROGRAMS – SCIENCE February 2018

### ESSENTIAL WORK AT RISK

For almost 50 years, dedicated EPA employees have worked daily to improve the quality of our air, water and land, protecting our health and the environment in ways we cannot take for granted. The next generation of emerging environmental and public threats is subtler and not always as visible to the public. Consider the implications if EPA is not provided adequate resources to perform its core functions.

### Scientific Underpinnings of Agency Actions

Sound science is at the core of almost everything EPA does to protect the American public from harm. Many forms of science, from toxicology through engineering, are interwoven into standard setting, reviews of new chemicals, disaster relief and Superfund cleanups. The subtlety of how science informs action may be why it is relatively easy to attack science as an unnecessary EPA function. Much of the public may not fully understand – or may take for granted – the interplay of EPA science in protecting people, communities and the earth.

EPA science meets the highest standards for integrity, peer review, transparency and ethics and is essential to support defensible actions that are often challenged in court. Data, analysis and judgments guided by the best available science are the underpinnings of assessments about the impacts of pollutants, how they travel through air or water, how easy or hard it is to capture and assess them, and what kinds of technologies are effective in their control. Hazardous waste sites in need of cleanups generally house multiple pollutants; science is the key to figuring out a safe level for each potentially dangerous contaminant present.

EPA supports research programs in six priority areas: Air, Climate and Energy; Safe and Sustainable Water Resources; Sustainable and Healthy Communities; Chemical Safety for Sustainability; Human Health Risk Assessment and Homeland Security. Scientists at the agency's three national laboratories, four national centers and 14 facilities across the country and Washington, D.C. conduct the work.

- **Cleaner air, longer lives** – Clean air research is at the core of EPA's seminal achievements making air cleaner over the past 40-plus years: removing lead from gasoline, reducing acid rain and the harmful effects of ozone and small air particles, decreasing second-hand smoke exposure, and improving vehicle efficiency and emission controls. National Ambient Air Quality Standards have laid the groundwork for improved health, increased life expectancy and fewer hospitalizations and related medical interventions.
  - Using lead in gasoline as an example, EPA evaluated multiple studies to determine how exposure to lead affects health, how exposures occur, what alternative technologies were available if lead was removed from gasoline and how to make the technical transition to cars that run on unleaded gasoline. Skillful reading of data was particularly important to evaluate four decades of studies conducted by scientists funded by Ethyl Corporation, General Motors and others in the industry that promoted and benefited from its use. In making regulatory decisions such as this, the results must often be defended in litigation, putting a big burden on scientists to back up their judgments.
- **Water we can drink with confidence** – EPA was tasked by Congress to set protective standards for pollutants that are discharged to water and to manage bacterial, viral, parasitic and chemical agents that might contaminate drinking water. Solid science is vital to meeting that challenge.
- **Cleaner neighborhoods** – The agency is directed by Congress to clean up polluted sites that once housed industrial facilities or poorly maintained gas stations. Solid science guides cleanup decisions.

- **Safer chemicals in a wide variety of applications and use, screened more quickly and efficiently** – EPA is tasked to be sure that the chemicals used in agriculture don't pose a threat to children and families and to review new chemicals before they are put on the market.
  - EPA scientists have developed faster, far less expensive chemical testing and screening tools and techniques that provide critical insight into the links between chemical exposure and health effects.
- **Finding innovative solutions** – EPA has been at the forefront of research to develop innovative solutions to some of the world's most pressing and complicated environmental problems.
  - **Citizen Science and Crowdsourcing** – More than five years ago, EPA recognized the values of citizen science (research and data collection by nonprofessionals) and crowdsourcing (enlisting a large number of people, paid or unpaid, to collect information that in the aggregate shows important trends) to increase the flow of information and ideas put to work on challenging issues. Today, EPA co-chairs a group representing over 60 federal agencies that facilitates crowdsourcing and citizen science. One of the group's efforts is CitizenScience.gov, a searchable website created in partnership with the White House Office of Science and Technology Policy that assists the public and federal agencies on collaborative efforts to find solutions to complex problems.
  - **The Village Green Project** - The project is an EPA-led, community-based research effort to demonstrate real-time air monitoring technology, engage the public in learning about local air quality and collect high-quality data for research. Working with state and community partners, the Village Green team installs park benches that measure in real time two common air pollutants, ozone and fine particles, plus wind speed and direction, temperature and humidity using low cost technology. The data is transmitted to a public website every minute. Monitoring stations have been set up at schools, community parks and other easily accessible locations in Houston, Washington DC, Durham, NC, Kansas City, Philadelphia, Oklahoma City, Hartford, CT and Chicago.

#### **For Further information**

Visit our website: [www.environmentalprotectionnetwork.org](http://www.environmentalprotectionnetwork.org)

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