

Pioneers of Pollution Science: Firsts, Inventions, and Discoveries

Pollution Science · Answer Key · 12 Questions

1. Who is often credited with the first systematic study of the effects of industrial pollution on public health, particularly his work documenting the impact of lead poisoning in London in the mid-19th century?

- A) Robert Koch
- B) John Snow**
- C) Benjamin Franklin
- D) Joseph Lister

2. What groundbreaking invention in the early 20th century, initially developed for military purposes, later found significant applications in controlling industrial air pollution by removing particulate matter?

- A) The catalytic converter
- B) The electrostatic precipitator**
- C) The scrubber (wet or dry)
- D) The baghouse filter

3. The discovery of 'Smog' as a distinct environmental hazard, particularly in Los Angeles, is largely attributed to the pioneering research and naming by which atmospheric chemist in the 1940s?

- A) Wallace Carothers
- B) Linus Pauling
- C) Arie Jan Haagen-Smit**
- D) Gilbert N. Lewis

4. What significant environmental law, enacted in the United States in 1970, established the foundational framework for regulating air emissions and is considered a landmark in the scientific management of air pollution?

- A) The Resource Conservation and Recovery Act (RCRA)
- B) The Clean Water Act (CWA)
- C) The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- D) The Clean Air Act (CAA)**

5. Which scientific invention, patented in the 1930s, revolutionized the treatment of industrial wastewater by using microorganisms to break down organic pollutants?

- A) The activated sludge process**
- B) Reverse osmosis filtration
- C) Ion exchange resin
- D) Membrane bioreactor (MBR)

6. The term 'Silent Spring', published in 1962, brought widespread attention to the dangers of pesticide pollution. Who was the author of this seminal work?

- A) Rachel Carson**
- B) Barry Commoner
- C) Aldo Leopold
- D) Marjory Stoneman Douglas

7. The first successful, large-scale implementation of a municipal solid waste incineration plant with energy recovery (waste-to-energy) occurred in which European city in the late 19th century, setting a precedent for future waste management technologies?

- A) Paris, France
- B) London, England
- C) Vienna, Austria**
- D) Berlin, Germany

8. What discovery in the 1970s, involving the role of chlorofluorocarbons (CFCs) in depleting the stratospheric ozone layer, led to significant international agreements on pollution control?

- A) The discovery of the greenhouse effect
- B) The identification of acid rain precursors
- C) The discovery of the ozone hole**
- D) The understanding of eutrophication

9. The development of the first comprehensive model to predict the long-range transport of atmospheric pollutants, particularly sulfur dioxide, was a significant early achievement in the study of transboundary pollution. Which research initiative in the 1970s is most associated with this?

- A) The Global Atmospheric Research Programme (GARP)
- B) The International Geosphere-Biosphere Programme (IGBP)
- C) The Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe (EMEP)**
- D) The World Ocean Circulation Experiment (WOCE)

10. Who is recognized as a pioneer in environmental forensics, developing early methods to trace the sources of chemical contamination in the environment, notably his work with oil spills in the mid-20th century?

- A) Sir Alexander Fleming
- B) Thomas Midgley Jr.
- C) Edward G. K. (Ned) Ball**
- D) Svante Arrhenius

11. What invention, patented in the late 19th century, was one of the earliest significant mechanical devices designed to remove solid waste from rivers and harbors, thus addressing early forms of water pollution?

- A) The Archimedes screw
- B) The hydraulic ram
- C) The steam dredge**
- D) The centrifugal pump

12. The identification of dioxins as highly toxic byproducts of industrial processes, particularly in the 20th century, was a critical discovery in understanding persistent organic pollutants. Which major industrial accident in 1976 brought the risks of dioxin contamination into sharp public focus?

- A) Chernobyl disaster
- B) Bhopal disaster
- C) Seveso disaster**
- D) Exxon Valdez oil spill