Glossary of Terms

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Abate—(abatement) (1) to put an end to, (2) to reduce in degree in intensity or to reduce in value or amount.

Acid Rainfall—Rainfall that is increasingly more acid, and thus more toxic to the environment, under conditions of increasing air pollution. Rainfall in the eastern United States has become 32 times more acid than it was in the 1950's,

Activated Sludge Plants—Wastewater treatment facilities in which the wastewater passes through an aerated tank containing a suspension of aerobic bacteria which feeds on the nutrients in the wastewater.

Agronomy—A branch of agriculture dealing with field crop production and soil management.

Ambient-General condition all around a given point.

Amine—(1) any of various basic compounds derived from ammonia by replacement of hydrogen by one or more univalent hydrocarbon radicals, (2) a compound containing one or more halogen atoms attached to nitrogen.

Best Management Practice (BMP)—Alternatives designed to reduce or prevent runoff of pollution discharges or emissions that adversely affect air, land, or water, including cost-effective determinations and evaluation of social and economic impacts.

Bioassay—A particular technique for testing a substance against a living tissue for toxic, mutagenic, carcinogenic, and teratogenic agents.

Biodegradable —Capable of being broken down into innocuous products by the action of living beings (micro-organisms).

Biomass—The amount of living matter (as in a unit area or volume of habitat),

BOD—Biochemical oxygen demand; biological oxygen demand.

Brines—(d) water saturated or strongly impregnated with common salt, (b) strong saline solution (as of calcium chloride),

"BROX" System—System which treats organically contaminated brines generated in glycol production.

Carcinogen— A substance or agent which produces or incites cancer.

Catalyst—A substance (as an enzyme) that initiates a chemical reaction and enables it to proceed under milder conditions (for example, at a lower temperature) than otherwise possible.

Chemosterilant—A substance that produces sterility (as of an insect) without marked alteration of mating habits of life expectancy.

CHESS (Community Health Effects Surveillance Studies) — EPA's CHESS study found that sulfate concentrations in California and in States east of the Mississippi are in the 7– 13 $\mu m/_m 3$ range (μ m— micromoles) and that Northeastern States have concentrations over 13 $\mu m/_m 3$. This means that within the eastern half of the continental United States, levels of sulfates were higher at urban sampling sites than at nonurban sites. This study gives significant evidence of the adverse effects of atmospheric sulfates. From such studies there may be enough evidence to show a cause/effect relationship between ambient sulfur oxides and pulmonary diseases, such as emphysema.

Climatology—The science that deals with climates and their phenomena.

Closed-Cycle Technology—Processes designed to prevent all pollutants from escaping into the environment.

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Combined Sources Research—The development of technology to treat industrial wastes from several plants in a region with a single facility or in combination with municipal waste management.

Compliance Monitoring—Monitoring which is undertaken to gather specific evidence from a point source or discharge for use in possible litigation.

Control Technology—A combination of hardware, operating procedures, or process changes used to reduce the harmfulness of gaseous, liquid, or solid effluents from a pollution source; normally based on contaminant (1) removal and isolation, (2) transformation chemically and/or physically to a less harmful form, or (3) dispersion to prevent localized high levels.

Critera Pollutants—Pollutants for which an ambient air quality standard has been set, Currently standards have been set for six pollutants, sulfur dioxide ($S0_2$), carbon monoxide (CO), total suspended particles (TSP), hydrocarbons (HC), oxidants (OX) and nitrogen oxide (NO_x). The expectation is that approximately 25 more criteria pollutants will be promulgated between 1976 and 1978.

Cytogenetics —A branch of biology that deals with the study of heredity and variation by the methods of both cytology (history of cells) and genetics.

Ecological Criteria Development—Includes laboratory studies (such as bioassays) to establish tolerable pollutant levels. Work performed under ecological criteria is performed in direct response to legislative mandates to define numerical standards for pollutants.

Ecological Processes and Effects Subprogram —This research subprogram provides EPA with the knowledge and theoretical structure on which to base environmental criteria, standards, and regulations.

Ecosystem— A living community and the physical environment associated with it, functioning as a unit in nature.

Effluent—The outflow from a pollution source.

Energy Conservation, Utilization, and Technology Assessment Subprogram—This subprogram focuses on identification, characterization, assessment, and development of control technology for pollutants associated with utility and industrial combustion sources.

Energy Extraction and Processing Technology Subprogram—The objective of this subprogram is to permit a rapid increase in extraction and processing of domestic energy resources and to enable these energy sources to be used effectively in an environmentally compatible manner.

Environmental Management Subprogram— The objective of this subprogram is to provide regional environmental planners and managers with methods to determine feasible alternative solutions to specific environmental problems and to provide techniques for selecting lowest cost solutions.

Epidemiology—(1) a branch of medical science that deals with the incidence, distribution, and control of disease in a population; (2) the sum of factors controlling the presence or absence of a disease or pathogen.

Estuary—A water passage where the tide meets a river current, especially an arm of the sea at the lower end of a river.

Eutrophic—Well nourished—rich in dissolved nutrients (as phosphates) but often shallow and seasonally deficient in oxygen.

Fate—The final destination for a substance which has traveled through the biosystem.

F1oc—A loose, fluffy mass formed by the aggregation of a number of fine particles suspended in a liquid medium, usually water.

Flocculate—To cause to aggregate into a fluoculent (loose, fluffy organization) mass.

Flue-Gas Desulfurization (FGD)—Process by which flue gas from coal-fired utility and industrial boilers is cleaned by passage over or through a bed of chemically active

minerals, such as lime or limestone. This process is one of the few coal pollution control techniques available in the 1970's which meets Clean Air Act requirements.

Fluidized-Bed Combustion (FBC)—Technique for burning coal on a suspended bed of mineral matter.

Freon—Generic term, originally a trade name, used for any of various nonflammable fluorinated hydrocarbons used as refrigerants and/or propellants for aerosols.

Geothermal-Of or relating to the heat of the earth's interior.

Glycol—Ethylene glycol—an alcohol contain-ing two hydroxyl groups.

Groundwater—Water within the earth that supplies wells and springs.

Halogen—Any of five elements—fluorine, chlorine, bromine, iodine, and astatine—That form part of group VII A of the periodic table and exist in the free state normally as diatomic molecules.

Hazardous Air Pollutant—An air pollutant to which no ambient air quality standard is applicable and which in the judgment of the EPA Administrator may cause, or contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating illness.

Health and Ecological Effects Program—This program is fundamental to EPA's responsibility to set criteria standards and guidelines to enhance environmental quality. It provides information for the establishment of water quality criteria, air quality criteria, ocean disposal criteria, pesticide registration guidelines, effluent standards for toxic and hazardous materials, and radiation standards.

Health and Ecological Effects/Energy Subprogram—This subprogram identifies all adverse environmental aspects (essential for criteria development and control technology requirements) associated with energy extraction, conversion and use.

Integrated Assessment Subprogram (part of the Energy/Environmental Program)—This subprogram's objectives are to integrate the complex, environmental, social, and economic issues of various technologies under alternative environmental management systems.

Intermittent Controls-Controls which are used at intervals, that is, put into use when pollution is heavy, then later turned off or discontinued.

Lichen—Any of numerous complex thallophytic plants made up of an algae and 'a fungus growing in symbiotic association on a solid surface (as a rock).

Malathion—A thiophosphate insecticide $C_{10}H_{19}O_6PS_2$ with a lower mammalian toxicity than parathion.

Marginal Land—Land that is barely productive agriculturally due to its nonproductive capacity or its limited water supply. Attempts made to use such "marginal land" often result in accelerated land erosion, resource degradation, and the impairment of wildlife habitat and aquatic environments.

Materials Processing Research—This research covers many industrial activities that mechanically or chemically change a material from one form to another (e.g., metalworking or electroplating).

Materials Production Research—This research includes problems of industries concerned with exploration for and production of raw materials such as iron, aluminum, and limestone.

Measurement Techniques and Equipment Development Subprogram—This subprogram involves development, evaluation, and demonstration of field and laboratory measurement and monitoring methods and instrumentation.

Microcosm—A community or other unity that is a typical or ideal example of a larger unit y.

Minerals Processing and Manufacturing Industries Subprogram—This subprogram considers point sources of water, air, and residue pollution produced by industry.

Minority Institutions Research Support (MIRS)—An EPA program conducted to direct research grants to minority institutions in the area of environmental research.

Mobile Source Pollutants—Pollutants resulting from a source that moves (i.e., automobile emissions).

Monitoring and Technical Support Program—This program includes research, development, and demonstration activities and direct assistance and support to all of EPA. Program includes three subprograms: Measurement Techniques and Equipment Development, Quality Assurance, and Technical Support.

Mutagenesis—The occurrence or induction of a relatively permanent change in hereditary material involving either a physical change in chromosome relations or a biochemical change in the codons (a triplet of nucleotides that is part of the genetic code and that specifies a particular amino acid in a protein or starts or stops protein synthesis) that make up genes.

Noncriteria Pollutant—Hazardous pollutant (such as mercury, fluorides, vinyl chloride, etc.) for which no ambient air quality standard has been established. Insufficient health effects data have been developed to establish a "safe" exposure level for these pollutants.

Nonpoint Source Pollutants—Pollutants arising from certain management practices in the area of renewable resources, such as application of fertilizers or pesticides to productive land.

NO_x. Control Technology—This research and development seeks to identify, assess, and promote development of cost-effective commercial methods for control of oxides of nitrogen (NO_x) from both existing and new stationary combustion sources.

OSWMP (Office of Solid Waste Management Programs)—This Office was established by EPA to deal with the national solid waste problem.

Outfall—The outlet of a body of water; the mouth of a drain or sewer.

Ozone—A triatomic form of oxygen formed naturally in the upper atmosphere by a photo chemical reaction with solar ultraviolet radiation. It is also generated commercially by an electric discharge in ordinary oxygen or air. It is a major agent in the formation of smogs and is used especially in disinfection and deodorizatiort and in oxidation and bleaching. Its natural role in the upper atmosphere is to shield the earth from excess ultraviolet radiation.

Pathogen—A specific disease-causing agent such as a bacterium or virus.

Pesticide Registration—The EPA process by which a pesticide is approved for use.

Petrochemical—A chemical isolated or derived from petroleum or natural gas.

Pheromone—A chemical substance that is produced by an animal and serves as a stimulus to other individuals of the same species for one or more behavioral responses.

Physical and Chemical Coal Cleaning—This process involves methods to physically or chemically remove sulfur from coal having a moderate sulfur content (1–2%). This allows coal to be burned in conformity with Clean Air Act standards.

Pollutant-of-the-Month Syndrome-Crisis atmosphere produced by a continuing series of revelations which show new substances to be harmful.

Primary Air Quality Standards—Primary standards are defined as "allowing an adequate margin of safety" in protecting the public health.

Public-Sector Program—This program includes three research subprograms: Waste Management, Water Supply, and Environmental Management.

Pyrolysis—Breaking up of large organic molecules brought about by the action of heat.

Quality Assurance Subprogram--This subprogram focuses on standardizing measurement methods, providing standard reference materials and samples, developing quality-control guidelines and manuals, on-site evaluation of analytical laboratories, etc.

Regenerable—Substances which can be reconstituted and used again.

Renewable Resources Subprogram—This subprogram includes food, fiber, and wood production and related activities ranging from agricultural production through har - vesting.

Retrofit—To furnish with new parts or equipment not available or installed at the time of manufacture.

Safe Drinking Water Act (SDWA)—The EPA Administrator may conduct research, studies, and demonstrations relating to the causes, diagnosis, treatment, control, and pretension of physical and mental diseases and other impairments of man resulting directly or indirectly from contaminants in water, or to the provision of a dependably safe supply of drinking water.

Saline—Consisting of or containing salt.

Salmonid—Genus name (Salmonidae) of any of a family of elongate soft-finned fishes (as a salmon or trout) that have the last vertebrae upturned.

Science Advisory Board (SAB)—Board established to provide a strong, direct link between EPA's Administrator and the scientific community.

Scrubber—A large-scale and relatively expensive device for accomplishing flue-gas desulfurization (see FGD definition). In addition, some scrubbers accomplish partial removal of NO_x particles.

Second-Generation Flue-Gas Desulfurization Process—Any of several processes which yield usable sulfur compounds as a byproduct and/or permit reuse of the chemicals required in the desulfurization process.

Secondary—A backup system or program.

Secondary Air Quality Standards—These standards protect the public "from any known or anticipated adverse effects" (i.e., not necessarily health effects).

Secondary Treatment Plants—Examples of these plants are: wastewater lagoons, trickling filters, or activated sludge plants. These plants alleviate the need for installation of entirely new treatment systems.

Silviculture—A branch of forestry dealing with the development and care of forests,

Sludge—(l) a muddy deposit (as on a river bed); (2) a muddy or slushy mass, deposit, or sediment: as a precipitated solid matter produced by water and sewage treatment process or muddy sediment in a steam boiler.

Small Particle Control Technology-Control technology to reduce fine particle emissions (less than 3 microns in diameter).

Solid Waste Disposal Act (SWDA)—This act directs the EPA Administrator to conduct and cooperate research efforts relating to any adverse health and welfare effects of the release into the environment of materials present in solid waste, and methods to eliminate such effects; the operation and financing of solid waste disposal programs; the reduction of the amount of such waste and unsalvageable materials; the development and application of new **and improved methods** of collecting and disposing of solid waste, and processing and recovering materials and energy from solid wastes.

St. Louis Regional Air Pollution Study—ORD study to develop and validate regional-scale models for criteria air pollutants.

Standard of Performance—A standard for emission of air pollutants which reflects the degree of emission limitation achievable through the application of the best system

of emission reduction which (taking into account the cost of achieving such reduction) the EPA Administrator determines has been adequately demonstrated.

Stationary Source Pollutants—Pollutants caused by sources which do not move (i.e., factories and powerplants).

SEAS (Strategic Environmental Assessment System)—An operational tool for environmental forecasting and policy analysis. EPA planned to have SEAS support an impact assessment of energy, environment, and recovery tradeoffs and alternatives, but it is now undergoing reevaluation.

Synergism—A cooperative action of discrete agencies (such as chemicals or muscles) so that the total effect is greater than the sum of two or more effects taken independently.

Tertiary—A system which follows both a main and secondary effort.

Teratology—The study of malformations, monstrosities, or serious derivations from the normal type in organisms.

Toxicology—A science that deals with poisons and their effect and the problems involved (as clinical, industrial, or legal).

Toxic Substance—Chemicals considered dangerous to health and the environment (e.g., phenols).

Trace Metals—Possibly toxic metals that move through the environment and humans in very small quantities.

Transport—Movement of a substance through the ecosystem.

Transport and Fate of Pollutants Subprogram—This subprogram is responsible for the development of empirical and analytical techniques that relate air and water pollution source emissions and discharges to ambient exposures.

Triazine —Any of three compounds $C_3H_3N_3$--containing a ring composed of three nitrogen atoms; also: any of various derivatives of these including several used as herbicides.

Trickling Filters—Wastewater treatment equipment in which wastewater is sprayed on and trickles down through an aerated bed of rocks, the surfaces of which are coated with bacterial populations which feed on the nutrients in the wastewater.

Tritium—A radioactive isotope of hydrogen of mass three times the mass of ordinary light hydrogen.

Trophic-Of, relating to, or characterized by nutrition.

Trophic Level-One of the hierarchal strata of a food web characterized by organisms which are the same number of steps removed from the primary producers.

Ureas—A soluble basic nitrogenous compound $(CO(NH_2)_2)$ that is the chief solid component of mammalian urine and an end product of protein decomposition, is synthesized from carbon dioxide and ammonia, and is used especially in synthesis (as of resins and plastics) and in fertilizers and animal rations.

Waste Management Subprogram—This subprogram focuses on prevention, control, treatment, and management of pollution produced by community, residential, or other nonindustrial activities. Research concerns municipal and domestic waste water and collection/transport systems, urban land surface runoff, municipal solid wastes, and associated air pollutants.

Wastewater Lagoons—Shallow earthen ponds, usually lined, in which liquid wastes are stored for an extended period to promote natural setting of suspended solids and decomposition of organic compounds in the stored fluid.

Watershed—(1) water parting, (2) a region or area bounded peripherally by a water parting and draining ultimately to a particular watercourse or body of water, (3) a crucial dividing point or line.

Water Supply Subprogram —This subprogram focuses on three areas of concentration: health effects, water treatment, and systems management and groundwater management.