Appendix A. Glossary of Useful Terms

Here are definitions of some of the more commonly-used terms are that will be encountered by participants in Sustainable Futures and those that use the P2 Framework models and methods. Many more are available on the Agency's web site at http://www.epa.gov/OCEPAterms/.

10th percentile facility – Used by E-FAST, this is a statistical term representing low values. The 10th percentile facility represents lower release and stream flow values such that only 10% of all facilities have values lower than the 10th percentile facility.

7Q10 flow – Lowest 7-consecutive day average stream flow over a 10 year period (used to assess chronic risks to aquatic life).

Acute toxicity – Adverse affects on any living organism that results from a single dose or single exposure of a chemical; any poisonous effect produced within a short period of time, usually less than 96 hours.

ADD (Average daily dose) – The estimate of dose averaged over the number of years of use/exposure to the chemical; used in assessments of risk of non-cancer chronic health effects.

APDR (Acute potential dose rate) – The estimated dose on a given day; used in assessments of the risk of acute toxic effects.

BCF – Bioconcentration factor (BCF) is the ratio (in L/kg) of a chemical's concentration in the tissue of an aquatic organism to its concentration in the ambient water. BCF indicates the potential for the chemical to concentrate in lipids (fats) of organisms.

Bioaccumulation – The process in which lipid soluble chemicals are stored in fatty tissue (lipids) of organisms and can increase in concentration over time. Bioaccumulation is update through the food chain.

Bioassay – Testing method that measures the effects of a material on living organisms.

Bioconcentration – The accumulation of a chemical in fatty tissues (lipids) of a fish or other organism to levels greater than that in the surrounding medium.

Biodegradable – Ability of a substance to be broken down physically and/or chemically by microorganisms.

Biomagnification – Process in which lipid soluble substances increase in fatty tissues (lipids) of organisms higher in the food web as contaminated food species are consumed.

Carcinogen(ic) – Ability of a substance to cause cancer.

Chemical Abstract Service (CAS) – Organization which assigns unique numbers to chemical substances submitted to them. CAS Registry Numbers are the unique identifier for a chemical substance, while chemical names may not be unique.

Chemical Class – The general chemical group to which a chemical belongs (e.g., acid, base, hydrocarbon, etc.).

Chronic Toxicity – Adverse effects on any living organism in which symptoms develop slowly over a period of time (often the life time of the organism) or reoccur frequently.

Concentration of Concern (COC) or **Concern Concentration (CC)** – Reported in parts per billion (ppb) or parts per million (ppm), provides the concentration of a chemical in a stream and indicates the concentration at which harm is more likely to occur to aquatic organisms. Chronic COC is determined by dividing the lowest chronic toxicity value by 10.

Direct discharge – Under NPDES permitting, the discharge of chemicals or compounds directly to a surface water body.

Dose – In terms of monitoring exposure levels, the amount of a toxic substance taken into the body over a given period of time.

Dose Response – The manner in which an organism's response to a toxic substance changes as its overall exposure to the substance changes.

EC50 (Effective Concentration 50) – Median effective concentration is the concentration of a pollutant at which 50% of the test organisms die; a common measure of acute toxicity.

Effluent – The stream flowing out of a facility or water body. The concentrations in its flow are used to estimate potential health effects of the discharge.

Exposure – Pollutants that come in contact with the body and present a potential health threat, via inhalation, ingestion, or dermal routes. The route, magnitude, and duration of exposure all contribute to the ultimate risk for the organism.

Half-life – Time required for one-half of a chemical or compound to degrade.

Harmonic mean – The number of daily flow measurements divided by the sum of the reciprocals of the flows. A value that is more conservative than the arithmetic mean flow value. This value is used to assess chronic risks to humans.

Hazard – Potential for a substance to cause adverse effects to organisms, for example birth defects.

High end – A plausible estimate of an individual exposure or dose for those persons at the upper end of an exposure or dose distribution, above the 90th percentile, but no higher than the individual in the population who has the highest exposure.

Hydrophilic – Having an affinity for, or capable of dissolving in, water.

Influent – Stream flowing into a facility or water body.

Indirect discharge – Under NPDES permitting, in contrast to a *direct* discharger, an indirect discharger pumps effluent to another facility that has a permit to discharge to the stream. Indirect dischargers often pretreat their discharges prior to pumping them to the publicly owned treatment works.

KOC – Organic carbon partition coefficient – The ratio of amount of a chemical adsorbed per unit weight of organic carbon to the chemical concentration in solution at equilibrium. KOC is an indication of how the chemical will partition between the solid and solution phases of a water-saturated or unsaturated soil.

KOW – Octanol-water partition coefficient – The ratio of a chemical's concentration in the octanol phase to its concentration in the aqueous phase of a two-phase octanol/water system.

LADD (Lifetime average daily dose) – The estimated dose to an individual averaged over a lifetime of 70 years; used in assessments of carcinogenic risk.

LC50 (Lethal Concentration 50) – Median lethal concentration is the concentration of a pollutant at which 50% of the test organisms die; a common measure of acute toxicity.

LD50 (Lethal Dose 50) – The dose of a toxicant that will kill 50% of test organisms within a designated period of time. The lower the LD50, the more toxic the compound.

Lipophilic – Having an affinity for, or capable of dissolving in, fat (lipids) and fatty materials.

Loading – The amount of chemical that is discharged to a stream after treatment, reported in kg/day.

Milligrams/liter (mg/L) – A measure of concentration used in the measurement of fluids that is roughly equivalent to parts per million.

Moiety(ies) – Compounds formed when a larger compound is subdivided.

MSDS (Material Safety Data Sheet) – Printed material concerning a hazardous chemical including its physical properties, hazards to personnel, fire and explosive potential safe handling and transportation recommendations, health effects, reactivity, and proper disposal. These were originally established for employee safety by OSHA.

Mutagenicity – The property of a chemical to cause genetic mutations that are expressed in the next generation but not necessarily in the organism exposed to the mutagen.

No Observed Adverse Effect Level (NOAEL) or No Observed Effect Level (NOEL) – Level of exposure which does not cause observable harm.

NPDES (National Pollutant Discharge Elimination System) – The primary permitting program under the Clean Water Act which requires that dischargers of chemicals to surface waters obtain a permit from EPA. A NPDES permit number is a nine-character number with the two letter State abbreviation beginning the number (e.g., VA0001234).

Parts per billion (ppb) – One ppb is comparable to one kernel of corn in a filled, 45-foot silo, 16 feet in diameter.

Parts per million (ppm) – One ppm is comparable to one drop in the gasoline tank of a full-size car.

Parts per trillion (ppt) – One ppt is comparable to one drop in a swimming pool the size of a football field and 43 feet deep.

Permissible Exposure Limit (PEL) – Workplace exposure limits for contaminants established by OSHA.

Point Source – A stationary location or fixed facility such as an industry or municipality that discharges pollutants into air or surface water.

Pollution – Any substances in environmental media that degrade the natural quality of the environment.

Pollution Prevention (P2) – The concept stating that it is easier to prevent pollution than to clean up pollution after it has occurred.

Potential Dose Rate(s) PDR(s) – Provide an estimate of possible exposure rate to receptor from expected use, usually derived by modeling using default exposure factors.

POTW (Publicly Owned Treatment Works) – A municipal or public service district sewage treatment system.

Quantitative Structure Activity Relationships (QSARs) – A Structure Activity Relationship (see below) for which a numeric value can be determined. The QSAR describes the relationship between descriptors of chemical structure (e.g., molecular fragments, physical-chemical properties, etc.) and biological activity usually based on mathematical algorithms such as linear regression. NOTE: The terms QSAR and SAR are used interchangeably in this document.

Reach – A reach is a stream or river segment identified by EPA and assigned an 11-digit ID number. The first two numbers indicate the hydrologic region of the United States in which the reach is located.

Reference Dose (RfD) – The concentration of a chemical that is known to cause health problems.

Release – Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous or toxic chemical.

Risk – A measure of the chance that damage to life, health, property, or the environment will occur.

Risk Assessment – A risk assessment is the process that determines the increased risk from exposure to environmental pollutants together with an estimate of the severity of impact. Risk assessments use specific chemical and exposure information plus risk factors.

Structure Activity Relationship (SAR) – Predicts the toxicity of chemicals based on their structural similarity to chemicals for which toxicity data are available. SARs express the correlations between a compound's physicochemical properties and its toxicity. SARs measured for one compound can be used to predict the toxicity of similar compounds belonging to the same chemical class. EPA routinely uses SARs to estimate toxicity of chemicals submitted as Pre-Manufacture Notices mandated by Section 5 of the Toxic Substances Control Act (TSCA). NOTE: The terms QSAR and SAR are used interchangeably in this document.

NAICS – North American Industry Classification System (NAICS) replaced the Standard Industrial Classification (SIC) Code system in 1997 and identifies specific industrial activities.
http://www.census.gov/eos/www/naics

Toxicity Testing – Biological testing (usually with an invertebrate, fish, or small mammal) to determine the adverse effects, if any, of a chemical substance.