

GLOSSARY

ACUTE - involving a stimulus severe enough to rapidly induce a response; in toxicity tests, a response observed in 96 hours or less typically is considered acute. An acute effect is not always measured in terms of lethality; it can measure a variety of effects. Note that acute means short, not mortality.

AMBIENT TOXICITY - toxicity manifested by a sample collected from an aquatic receiving system.

ATYPICAL BEHAVIOR OR APPEARANCE - abnormal behavior or appearance other than mortality, loss of equilibrium or immotility, such as gulping and/or darkly discolored.

BIOASSAY - a test used to evaluate the relative potency of a chemical by comparing its effect on a living organism with the effect of a standard preparation on the same type of organism. Bioassays are frequently used in the pharmaceutical industry to evaluate the potency of vitamins and drugs. "Bioassay" and "toxicity test" are not synonymous.

CHRONIC - involving a stimulus that lingers or continues for a relatively long period of time, often one-tenth of the life span or more. Chronic should be considered a relative term depending on the life span of an organism. A chronic effect can be lethality, growth, reduced reproduction, etc. Chronic means long.

CHRONIC VALUE (ChV) - a value lying between the NOEC and LOEC; derived by calculating the geometric mean of the NOEC and LOEC.

DEFINITIVE TEST - a toxicity test of usually greater length than a screening test of one species of organism of five or more concentrations of effluent or sample and one or more controls. Acute definitive tests are usually 48-hours for invertebrates and 96-hours for fish.

EC50 - the toxicant concentration adversely affecting 50% of exposed organisms at a specific time of observation.

EFFECTIVE CONCENTRATION (EC) - a point estimate of the toxicant concentration that would adversely affect a given percent of the test organisms.

EFFLUENT BIOMONITORING - the measurement of the biological effects of effluents (such as toxicity, biostimulation, and bioaccumulation).

INHIBITION CONCENTRATION (IC) - the toxicant concentration that would cause a given percent reduction in a non-quantal biological measurement for the test population. For example, the IC₂₅ is the concentration of toxicant that would cause a 25% reduction in mean young per female or in growth for the test population, and the IC₅₀ is the concentration of toxicant that would cause a 50% reduction. The linear interpolation method is used to calculate the IC.

LC50 - the toxicant concentration killing 50% of exposed organisms at a specific time of observation.

LETHAL CONCENTRATION (LC) - a point estimate of the toxicant concentration of toxicant to which organisms are exposed in a statistically significant adverse effect on the observed parameters (usually hatchability, survival, growth, and reproduction).

LOWEST OBSERVED EFFECT CONCENTRATION (LOEC) - the lowest concentration of toxicity to which organisms are exposed in a life-cycle or partial life-cycle test, which causes a statistically significant adverse effect on the observed parameters (usually hatchability, survival, growth, and reproduction).

MORTALITY (DEATH) - no movement of body or appendages observed after gently prodding (fish) or agitation of solution in test vessel (daphnids).

NO OBSERVED EFFECT CONCENTRATION (NOEC) - the highest concentration of toxicant to which organisms are exposed in a full life-cycle or partial life-cycle test, which causes no statistically significant adverse effect on the observed parameters (usually hatchability, survival, growth, and reproduction).

PROBABILITY - a number expressing the likelihood of occurrence of a specific event, such as the ratio of the number of outcomes that will produce a given event to the total number of possible outcomes.

SCREENING TEST - usually an abbreviated (24 or 48-hour) toxicity test of one species of organism to one sample of 100% effluent concentration and a control or receiving water. Screening tests are used to determine if a sample is acutely toxic to the test organisms at full strength, and if a definitive test should be performed.

TOXICITY TEST - the means to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of response of an exposed test organism to a specific chemical or effluent.

TOXIC UNIT ACUTE (TU_a) - the reciprocal of the effluent dilution that causes the acute effect by the end of the acute exposure period.
$$TU_a = \frac{100}{LC50}$$

TOXIC UNIT CHRONIC (TU_c) - the reciprocal of the effluent dilution that causes no unacceptable effect on the test organisms by the end of the chronic exposure period.

$$TU_c = \frac{100}{IC25} \quad \text{or} \quad \frac{100}{\text{sq. rt. (NOEC x LOEC)}}$$

WHOLE-EFFLUENT TOXICITY - the aggregate toxic effect of an effluent measured directly with a toxicity test.