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# Standard Terminology Relating to Bioremediation[1]

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## 1. Scope

1.1 This terminology defines the terminology used in test methods, specifications, guides, and practices related to bioremediation technology.

1.2 These definitions are written to ensure that standards related to bioremediation technology are understood and interpreted properly.

## 2. Referenced Documents

2.1 *ASTM Standards:*

F 873 Guide for Incinerating Oil Spill Wastes at Temporary Field Locations[2]

F 1481 Guide for Ecological Considerations for the Use of Bioremediation in Oil Spill Response—Sand and Gravel Beaches[2]

## 3. Terminology

3.1 *Definitions:*

**aerobes**—organisms that require air or free oxygen for growth. **F 1481**

**anaerobes**—organisms that grow in the absence of air or oxygen and do not use molecular oxygen in respiration. **F 1481**

**arctic**—the biogeographic realm that comprises the tundra and treeless grounds lying north of the timberline in the Northern hemisphere or south of the timberline in the Southern hemisphere.

**bioaugmentation**—the addition of microorganisms (predominantly bacteria) to increase the biodegradation rate of target pollutants. **F 1481**

**biodegradation**—the chemical alteration and breakdown of a substance, usually to smaller products caused by microorganisms or their enzymes. **F 1481**

**bioremediation**—the enhancement of biodegradation.

**bioremediation agents**—inorganic and organic compounds and microorganisms that enhance biological degradation processes, predominantly microbial. **F 1481**

**biostimulation**—the addition of microbial nutrients, oxygen, heat, or water, or some combination thereof, to enhance the rate of biodegradation of target pollutants by indigenous species (predominantly bacteria and fungi).

**buffer**—a solution of partially ionized acids or bases capable of reducing pH changes in the presence of added alkalis or acids.

**carcinogen**—cancer-causing agent.

**culture**—controlled inoculation, growth, and harvesting of known microorganisms.

**decomposers**—microorganisms, predominantly bacteria and fungi, that convert complex organic matter into simpler organic and inorganic molecules.

**disinfectants**—physical and chemical agents used for inactivating or destroying microorganisms.

**ecosystem**—organisms and the surrounding environment combined in a community that is self-supporting. **F 1481**

**effluent**—the liquid discharge from a process.

**end product**—the chemical compound resulting from a particular metabolic process.

**enrichment culture**—a liquid culture that enhances the growth of a given type of organism.

**landfill**—a land disposal technique that uses excavated pits to contain the oil spill waste material. The waste is placed in the excavation, covered over, and left to degrade. **F 873**

**leachate**—the liquid residue from the migration of environmental pollutants mediated by surface or ground water.

**marine**—relating to the ocean. **F 1481**

**medium**—the material that supports the growth and reproduction of microorganisms.

**mesophile**—an organism with an optimum growth temperature range of 20 to 45°C.

**metabolic pathway**—the sequence of biochemical reactions that allows conversion for carbon or energy assimilation.

**microbes**—microscopic organisms, including algae, bacteria, fungi, protozoa, and viruses.

**mineralization**—the microbial-mediated breakdown of organic materials into inorganic materials.

**mutagen**—a substance that increases the normal mutation rate.

**nutrient**—a substance that supports organismal growth. **F 1481**

**pathogens**—organisms that are capable of causing disease.

**petri plate**—a dish designed to contain solid growth medias.

**plasmids**—independently-replicating extrachromosomal genetic material.

**recalcitrant**—a substance that is resistant to microbial degradation.

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[2] *Annual Book of ASTM Standards*, Vol 11.04.

**terrestrial**—consisting of land, as distinguished from water.
**toxicity**—the property of a material, or combination of materials, to adversely affect organisms.
**tropical**—the region lying between the tropics of Cancer and Capricorn.
**tundra**—the vast, treeless, nearly level plains of the arctic regions.
**viability**—the ability to grow and reproduce.