

# Glossary of Terms and Acronyms

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## Glossary of Terms

**Acquired immunity** Disease resistance acquired after birth and characterized by antigen-specific promises. See humoral IMMUNITY and CELL-MEDIATED IMMUNITY; Compare NONSPECIFIC IMMUNITY.

Adaptive immunity: See ACQUIRED IMMUNITY.

Agranulocytosis: Absence of granulocytes in the blood.

Allergen: A substance known to be an agent contributing to hypersensitivity.

Allergy: Immunologic hypersensitivity. See HYPERSENSITIVITY.

Anaphylaxis: Acute reaction that follows rapid introduction of an antigen into an individual having preexisting IgE antibodies. Systemic anaphylaxis develops within seconds and is characterized by constriction of the larynx and bronchi and falling blood pressure. Local anaphylactic reactions are acute inflammatory reactions caused by local contact with antigen. See IMMEDIATE HYPERSENSITIVITY.

Antibody: A protein produced by B cells in response to stimulation by an antigen and that reacts specifically with that antigen. Antibodies are immunoglobulins.

Antigen: A substance that brings about an immune response when introduced into the body. Antigens are usually high molecular weight compounds, such as proteins. However, low molecular weight compounds (e.g., drugs or industrial chemicals) can bind to serum proteins and become antigenic.

Asbestosis: Fibrosis of the lungs resulting from inhalation of asbestos fibers.

Asthma: A usually chronic condition characterized by episodes of labored breathing.

Atopic: Having a tendency toward immediate hypersensitivity reactions due to IgE antibodies. Approximately 10 percent of the population manifest one or more forms of atopy. See IMMEDIATE HYPERSENSITIVITY; ANTIBODY.

Autoantibody: An antibody against a self antigen. See ANTIBODY.

Autoimmunity A condition characterized by cell-mediated or humoral immunologic response to antigens of one's own body. This occasional departure from the usual recognition of self and nonself contributes to a variety of diseases.

**B cell:** A lymphocyte that produces antibodies. See LYMPHOCYTE; ANTIBODY.

Bronchoalveolar lavage fluid: The fluid obtained from the lungs by lavage. Lavage is a technique in which an organ is flushed with water in order to analyze material in the drainage fluid (in this case, cells from the bronchioles and alveoli).

Bronchopulmonary aspergillosis: Infection of the bronchi and lungs by the species *Aspergillus*, characterized by inflammatory lesions.

Bronchus: One of the large conducting air passages of the lung.

Byssinosis: An occupational respiratory disease associated with inhalation of cotton, flax, or hemp dust. It is characterized initially by chest tightness, shortness of breath, and cough but may lead to permanent lung damage.

Carcinogen: A substance that causes cancer.

Cell-Mediated immunity: Immunological reactions initiated and mediated by T cells. See T CELL. *Compare* humoral IMMUNITY.

Challenge: Administration of an antigen to assess the state of immunity. In immunotoxicological testing, an experimental animal is challenged with an infectious agent or tumor cells to determine whether exposure to a chemical decreased the animal's ability to fight infection or cancer. See ANTIGEN.

Complement: A series of reactions involving approximately 20 proteins that circulate in the blood in an inactive form. When the first complement substance is triggered – usually by an antibody locked to an antigen– it sets in motion a ripple effect. As each component is activated, it acts upon the next in a precise sequence of carefully regulated steps. This phenomenon, known as the complement cascade, causes release of the chemicals that produce the redness, warmth, and swelling of the inflammatory response. It can also bring rapid death to bacteria and other cells by puncturing their cell membranes. See ANTIBODY; ANTIGEN.

Contact sensitization: To stimulate an immune response upon initial skin contact with an antigen with the consequence of preparing the body for a stronger response upon reexposure to the antigen.

Cytokine: A substance produced by cells, including cells, that transmits messages between cells to control and modulate immune response.

Cytotoxic: Lethal to cells.

**Delayed-type hypersensitivity:** An inflammatory reaction that occurs 24 to 48 hours after challenge with antigen and is a result of cell-mediated immunity. See **HYPERSENSITIVITY**.

**Dermatitis:** An inflammatory skin condition.

**Dose-response:** The quantitative relationship between exposure to a substance, usually expressed as a dose, and the extent of toxic injury or disease.

**Edema:** Swelling.

**Endpoint:** The disease, condition, or adverse effect resulting from exposure to a toxic substance (e.g., immunosuppression, infection, cancer, death).

**Epidemiology:** The scientific study of the distribution and occurrence of human diseases and health conditions and their determinants.

**Erythema:** Redness.

**Hematology:** The science of blood and its nature, function, and diseases.

**Histocompatibility:** The extent to which individuals or their tissues are immunologically similar.

**Histology:** The study of the minute structure, composition, and function of body tissues.

**Host resistance:** The ability of an organism to mount a successful immune response against disease-causing antigens.

**humoral immunity:** Immunity associated with antibodies that circulate in the blood. See **ANTIBODY**. Compare **CELL-MEDIATED IMMUNITY**.

**Hypersensitivity:** A state of heightened reactivity to a previously encountered antigen.

**Immediate hypersensitivity:** Immune response mediated by antibodies, characterized by hives, wheezing, and/or abrupt changes in blood pressure, and occurring with a few minutes or hours after exposure to an antigen.

**Immune system:** A specialized group of body cells, cell products, tissues, and organs that respond to foreign organisms and substances in the body.

**Immunize:** To deliberately introduce an antigenic substance (vaccination, or active immunization) or antibodies (passive immunization) into an individual, with the aim of producing immunity to a disease. Immunotoxicologists sometimes refer to the process of exposing an animal to an antigen in order to test the animal's ability to mount, at some later point, an immune reaction to the antigen as immunization.

**Immunocompetence:** The capacity to respond immunologically to an antigen.

**Immunoglobulin.** Protein that has antibody activity or that is antigenically related to an antibody. They are grouped into five categories based on structural differences: IgG, IgM, IgA, IgD, IgE. See **ANTIBODY**.

**Immunology.** The science concerned with the phenomena that allow an animal to respond to a subsequent exposure to a foreign substance in a way that is distinct from the way it responds to the initial exposure to that same substance.

**Immunologic:** Pertaining to immunology.

**Immunosuppression:** Suppression of immune response.

**immunotoxic.** Having the potential to adversely affect immune response or damage components of the immune system.

**immunotoxicant:** A substance that elicits an adverse immune response or damages the immune system.

**immunotoxicity:** An adverse or inappropriate change in the structure or function of the immune system after exposure to a foreign substance.

**Inhalant:** A substance that may be taken into the body through the respiratory system.

**Innate immunity** See **NONSPECIFIC IMMUNITY**.

**In vitro:** Literally, in glass; pertaining to a biological process taking place in an artificial environment, usually a laboratory.

**In vivo:** Literally, in the living; pertaining to a biological process or reaction taking place in a living organism.

**Latent effect:** A reaction to a toxic substance that is not immediately evident but that appears later in life; also referred to as a silent effect.

**Leukocyte:** A white cell. Major classes of leukocytes are granulocytes, lymphocytes, and monocytes.

**Lymphocyte:** A specialized leukocyte involved in the immune response. B-lymphocytes originate in the bone marrow and when stimulated by an antigen produce circulating antibodies; See **humoral IMMUNITY**. T-lymphocytes are produced in the bone marrow and mature in the thymus gland and engage in a type of defense that does not depend directly on antibody attack; See **CELL-MEDIATED IMMUNITY**. See **B CELL**; **T CELL**.

**Lymphoid organs:** The principal organs of the immune system, including bone marrow, thymus, spleen, and lymph nodes. They produce, store, and distribute the immune system cells.

**Lymphokine.** A protein that mediates interactions among lymphocytes and is vital to proper immune func-

tion. Interleukins and interferon are lymphokines. Lymphokines are cytokines.

Lyse: To break up or rupture a cell membrane.

Microphage: A type of large, amoeba-like cell, found in the blood and lymph, which ingests dead tissue, tumor cells, and foreign particles such as bacteria and parasites. The microphage also plays an important role in antigen processing and presentation.

Mitogenesis: The initiation of cell division, or mitosis.

Monocyte: Phagocytic, large leukocytes containing one nucleus.

Myelogenous leukemia: A cancer of the blood granulocytes that usually occurs in persons of age 30-50.

Nasal lavage fluid: The fluid obtained from the nasal passages by lavage. See BRONCHOALVEOLAR LAVAGE FLUID.

Natural killer cell: A type of lymphocyte that attacks cancerous or virus-infected cells without previous exposure to the antigen. Also called NK cell.

NK cell: See NATURAL KILLER CELL.

Nonself: That which is not recognized by an individual's immune system as being a natural constituent of that individual's body.

Nonspecific immunity: Immunity that exists from birth and that occurs without prior exposure to an antigen; also called innate immunity. *Compare* ACQUIRED IMMUNITY.

Pathology: The scientific study of the cause of disease and of the associated structural and functional changes that are the result of disease.

Peripheral blood: Blood in the circulation remote from the heart.

Pesticide: A generic term referring to toxic substances developed to control pests; they include insecticides, fungicides, rodenticides, and herbicides.

Phagocytosis: Consumption of foreign particles (e.g., bacteria) by cells that use ameboid movement to surround the particle and then ingest it. Macrophages are phagocytes.

Pneumoconiosis: A condition characterized by the deposition of mineral dust in the lungs as a result of occupational or environmental exposure.

Pneumonitis: Inflammation of the lungs.

Reference dose (IUD): A term used to characterize risk and derived by applying safety factors to the highest level at which a substance produces no effect. If human **exposure** to a substance is below the RfD, no risk is assumed to exist; if exposure exceeds the RfD, risk is assumed to exist. The term may be used interchangeably with acceptable daily intake.

Rhinitis: Inflammation of the lining of the nose.

Right-to-know laws: State and local laws requiring companies to inform workers and communities of the chemical names and hazards of their products.

**Self: That** which is recognized by an individual's immune system as being a natural constituent of that individual's body.

Silicosis: A condition of lung fibrosis which is brought about by prolonged inhalation of silica dust.

Structure-activity relationship: The relationship between a chemical's structure and the biochemical changes it induces.

T cell: A lymphocyte produced in the bone marrow that matures in the thymus and is integral to cell-mediated immunity. T cells regulate the growth and differentiation of other lymphocytes and are involved in antibody production. See LYMPHOCYTE.

Teratogen: A substance that causes physical defects in offspring by adversely affecting developing embryos.

Toxicity: The quality of being poisonous or the degree to which a substance is poisonous.

White cell: A colorless cell in the blood, lymph, or tissues that is an important component of the immune system. See LEUKOCYTE.

## Acronyms

ACGIH	–American Conference of Governmental Industrial Hygienists
ADAMHA	–Alcohol, Drug Abuse, and Mental Health Administration
AIDS	–Acquired Immune Deficiency Syndrome
ATSDR	–Agency for Toxic Substances and Disease Registry
AZT	–Azidothymidine, now known as zidovudine
CAA	–Clean Air Act
CBER	– Center for Biologics Evaluation and Research (FDA)
CDC	– Centers for Disease Control
CDER	– Center for Drug Evaluation and Re- search (FDA)
CERCLA	– Comprehensive Environmental Response, Compensation and Liability Act
CFSAN	– Center for Food Safety and Nutrition (FDA)
CPSA	–Consumer Product Safety Act
CPSC	– Consumer Product Safety Commission
CTL	– cytotoxic T lymphocyte
CWA	– Clean Water Act

DES	–Diethylstilbestrol	NK	– natural killer
DHHS	–Department of Health and Human Services	NLM	–National Library of Medicine
DMN	–Dimethylnitrosamine	NTP	–National Toxicology Program
DNA	–Deoxyribonucleic acid	OHR	–Office of Health Research (EPA)
DTH	–Delayed-type hypersensitivity	OPP	–Office of Pesticide Programs (EPA)
EPA	–Environmental Protection Agency	OSHA	–Occupational Safety and Health Administration
EPCRA	–Emergency Planning and Community Right-to-Know Act	OTA	– Office of Technology Assessment
FDA	–Food and Drug Administration	OTS	–Office of Toxic Substances (EPA)
FDCA	–Food, Drug, and Cosmetic Act	PAH	– polycyclic aromatic hydrocarbons
FHSA	–Federal Hazardous Substances Act	PBB	–polybrominated biphenyls
FIFRA	–Federal Insecticide, Fungicide, and Rodenticide Act	PCB	–polychlorinated biphenyl
FTE	–full-time equivalent	PEL	–permissible exposure limit
HAH	–halogenated aromatic hydrocarbon	PFC	–plaque forming cell
HLA	–human leukocyte antigen	PLA	–Product Licensing Application
HSDB	–Hazardous Substances Data Bank	PMN	–Premanufacture Notice
Ig	– immunoglobulin	POMS	– Program Operations Manual System
IND	–Investigative New Drug	PPB	– parts per billion
LPS	–lipopolysaccharide	PPM	– parts per million
MCL	— maximum contaminant level	PVIZT	– 1-phenyl-5-vinyl-2-imidazolidine-thione
MCS	— multiple chemical sensitivity	RCRA	–Resource Conservation and Recovery Act
MEST	— mouse ear swelling test	RQ	— reportable quantity
MLR	— mixed leukocyte response	RTECS	– Registry of Toxic Effects of Chemical Substances
MSHA	–Mine Safety and Health Administration	SRBC	– sheep red blood cell
NAAQS	–National Ambient Air Quality Standards	SDWA	–Safe Drinking Water Act
NCI	–National Cancer Institute	SSA	–Social Security Administration
NCTR	–National Center for Toxicological Research (FDA)	SSDI	–Social Security Disability Income
NDA	–New Drug Application	SSI	–Supplemental Security Income
NIEHS	–National Institute of Environmental Health Sciences	STEL	– short-term exposure limit
NIH	–National Institutes of Health	TCDD	–2,3,7,8-tetrachlorodibenzo-p-dioxin
NIOSH	–National Institute for Occupational Safety and Health	TDI	– toluene diisocyanate
		TPQ	–threshold planning quantity
		TRI	–Toxic Release Inventory
		TSCA	–Toxic Substances Control Act
		TWA	– time weighted average