

## Glossary

### A

- abasic site** a location in DNA that lacks a purine or pyrimidine base
- acaricide** a pesticide that kills mites and ticks
- acceptable ceiling concentration** as defined by the Occupational Safety and Health Administration, the level of an air contaminant to which an employee may be exposed at any time during an 8-hour shift, except for a time period and up to a concentration not exceeding the maximum duration and concentration listed as the acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift
- acinar cells** cells in the pancreas that secrete enzymes
- actinic keratoses** skin lesions induced by exposure to ultraviolet light
- acute** of short duration, rapidly progressing, or of high severity; in testing of rodents, refers to administration of an agent in a single dose
- adduct** a complex that forms when a chemical binds to a biological molecule, such as DNA or a protein
- adenine** one of the two purine bases in DNA; pairs with thymine
- adenocarcinoma** a malignant tumor of epithelial tissue in which the cells form a gland-like structure
- adenoma** a benign neoplasm of epithelial tissue in which the cells form glands or gland-like structures
- adenomatous polyp** a benign polyp originating in the epithelium of the rectum, colon, or stomach
- adipose tissue** fatty tissue
- adjuvant therapy** therapy involving both a primary treatment and an additional treatment that enhances the action of the primary treatment
- adrenal cortex** the outer portion of the adrenal gland
- adrenal gland** a hormone-secreting organ located above each kidney
- adrenal medulla** the inner portion of the adrenal gland
- aerobic** pertaining to biological processes that require oxygen
- aerodigestive tract** the combined organs and tissues of the respiratory tract and the upper part of the digestive tract
- aerodynamic diameter** a physical property of a particle or fiber of irregular shape that describes its aerodynamic behavior (how it moves through air) based on that of an idealized spherical particle of a given diameter
- aerosol** a dispersed suspension of fine particles in a gas
- agonist** a drug that can bind to the cellular receptors for another drug or natural substance and produce a physiological effect typical of that drug or substance
- alanine transaminase** an enzyme involved in metabolism, elevated blood levels of which are an indicator of liver damage
- albino** an organism with deficient pigmentation in skin, eyes, and hair
- aldehyde** any organic compound containing the group  $-CHO$ , which yields acids when oxidized and alcohols when reduced
- aliphatic** pertaining to or denoting organic compounds in which carbon atoms form open chains
- alimentary tract** the digestive tract
- alkali-labile sites** locations where DNA damage results in single-strand breaks under alkaline conditions
- alkene** a chemical compound containing a carbon-carbon double bond and having the general formula  $C_nH_{2n}$ , where  $n$  is the number of atoms
- alkyd** a synthetic resin used in paints and mold castings
- alkylating agent** a compound that forms chemical bonds with DNA, interfering with DNA replication; some alkylating agents are used as anti-cancer drugs
- allele** any one of a series of two or more variants of a gene that occupy the same position (locus) on a chromosome
- alloy** a substance made by combining two or more metals or a metal and another material
- alpha 2u globulin ( $\alpha_{2u}$  globulin) nephropathy** a mechanism of carcinogenicity associated with kidney tumors in male rats, but not females, and not considered relevant to carcinogenicity in humans
- alveolar** of or pertaining to the alveoli of the lungs
- alveoli** usually referring to small, sac-like pouches in the portion of the lungs where gas exchange with the blood occurs; also, sac-like structures in certain glands or in the jaws where the teeth arise
- alveolitis** inflammation of the alveoli
- ambient air** outdoor air to which the general public is exposed
- ameloblastoma** a tumor arising from cells that form tooth enamel
- amenorrhea** the absence or abnormal cessation of menstruation
- amine** an organic compound derived from ammonia ( $NH_3$ ) by the replacement of one or more hydrogen atoms (H) by organic groups
- amino acid** one of a class of organic compounds that form the main constituents of protein
- amyloidosis** the accumulation in body tissues of amyloid, an abnormal material consisting of protein fibers and carbohydrate
- anabolic steroid** a synthetic derivative of the male hormone testosterone used to promote growth and repair of body tissues
- anaerobic** pertaining to biological processes that do not require oxygen or that take place only in the absence of oxygen
- analgesic** a pain-relieving agent that does not cause loss of consciousness
- analogue** a compound that resembles another compound in structure, but is not necessarily an isomer
- analyte** a substance whose chemical constituents are being identified and measured
- analytical grade** the highest available purity of a chemical
- anaplastic** (of cancer cells) dividing rapidly and having little or no resemblance to normal cells
- androgen** any steroid hormone that promotes masculine characteristics
- anemia** the condition of having fewer circulating red blood cells than normal
- anesthetic** a substance used to prevent the sensation of pain
- aneuploidy** the condition of having an abnormal number of chromosomes
- angiogenesis** the development of blood vessels
- angiosarcoma** a malignant tumor arising from the lining of a blood vessel
- anionic** pertaining to an ion that carries a negative charge
- anthropogenic** caused by humans
- antibiotic** a drug that kills or inhibits the growth of bacteria
- antibody** a protein produced by the immune system to detect and remove a foreign substance
- anticonvulsant** a drug that lessens the severity of convulsions
- antigen** a molecule capable of inducing an immune response by the host organism
- anthelmintic** a drug used to treat parasitic infestations caused by helminths (parasitic worms) (also called anthelmintic)
- antimicrobial** a substance that kills microbes (bacteria, fungi, and protozoa), stops their multiplication or growth, or otherwise prevents their pathogenic action
- antimitotic therapy** treatment of cancer by inhibition of mitosis (cell division)
- antineoplastic** inhibiting the survival and proliferation of tumors

**antioxidant** a substance that inhibits chemical oxidation of another material

**antiseptic** a substance that inhibits the growth of microorganisms on living tissue

**aplastic anemia** a condition in which the body does not produce enough new blood cells

**apoptosis** programmed cell death, a normal process whereby cells die in response to biochemical signals from within the body

**aquaculture** the production of food by growing plants or animals in water

**aqueous** pertaining to, containing, or dissolved in water

**aquifer** an underground layer of water-bearing permeable rock, rock fractures, or unconsolidated materials (gravel, sand, or silt) from which groundwater can be extracted in a water well

**archaea** members of a domain or kingdom of single-celled microorganisms, formerly classified as bacteria, whose cells lack a nucleus but which have unique characteristics separating them from bacteria and eukaryotes

**aromatic** pertaining to cyclic flat organic molecules with unusual stability

**aromatic amine** an organic chemical compound consisting of an aromatic ring attached to an amine

**aromatic hydrocarbon** an organic chemical compound formed primarily from carbon and hydrogen atoms with a structure based on benzene rings

**arsenical** containing arsenic

**arterial** of or pertaining to arteries

**arteritis** inflammation of an artery

**ascaricide** a drug that treats roundworm infection

**assay** a procedure for measuring a property of a substance

**astrocytoma** a tumor of the brain or spinal cord originating in astrocytes, a type of glial cell

**atomic weight** the average mass of a given atom on a scale where 1 atomic mass unit equals 1/12 the average mass of a carbon atom

**auditory sebaceous gland** a secretory gland in the inner layer of the skin of the ear

**autoignition temperature** the lowest temperature at which a substance will spontaneously ignite

**autoimmune disease** a condition in which the body is harmed by its own immune system (also called autoimmune disorder or autoimmunity)

**autoimmune hemolytic anemia** a blood disease in which the body produces antibodies that destroy its own red blood cells

**azo** pertaining to compounds containing the azo group  $-N=N-$  as part of their structure

## B

**B cell** a type of white blood cell that makes antibodies (also known as a B lymphocyte)

**bacteria** members of a kingdom or domain of single-celled microorganisms whose cells do not contain a nucleus

**bactericide** an agent that kills bacteria or inhibits their growth

**bacteriophage** a virus with specific affinity for bacteria

**bacteriostat** an agent that inhibits the growth of bacteria

**bacteriostatic** inhibiting the growth of bacteria

**bacterium** the singular form of "bacteria"

**basal cells** cells that line the deepest layer of the epidermis

**bases** in genetics, nitrogen-containing compounds that are components of DNA and RNA

**benign tumor** an abnormal mass of tissue that does not spread beyond normal tissue boundaries

**beta-catenin ( $\beta$ -catenin)** a protein involved in regulating cell-to-cell adhesion and gene transcription; mutations of the beta-catenin gene are associated with cancer

**betel quid** an addictive mix of betel leaf, areca nut, and slaked lime that is chewed in some Pacific and Asian cultures

**bile** a fluid produced in the liver and stored in the gallbladder that aids in digestion, especially of fats

**bile duct** a tube through which bile passes from the liver to the gallbladder or from the gallbladder to the small intestine

**bilirubin** a pigment produced by the breakdown of heme from red blood cells

**bioaccessibility** the fraction of the total amount of a substance that is potentially available for absorption into the bloodstream

**bioaccumulation** the process by which a material in the environment accumulates within an organism

**bioassay** a test to determine the potency or concentration of a substance by measuring its effect on animals, isolated tissues, or microorganisms

**bioavailability** the extent to which a substance is absorbed into the bloodstream following exposure or administration

**bioconcentration** accumulation of a chemical in the tissues of an organism (e.g., a fish) to concentrations greater than in the surrounding medium (e.g., water)

**biodegradation** breakdown of a substance by microorganisms

**biomonitoring** measurement of the amounts of toxic chemical compounds, elements, or their metabolites in the human body

**biotransformation** conversion of molecules from one form to another within an organism

**bonded diamonds** diamond particles embedded in a metal or resin binding matrix

**bronchi** the plural of "bronchus"

**bronchiolar** of or pertaining to the bronchioles

**bronchiole** a small division of a bronchus

**bronchoalveolar** of or pertaining to the bronchial tubes and the alveoli in the lungs

**bronchoalveolar lavage** a procedure in which saline solution is introduced into the terminal bronchioles of the lungs and then removed to obtain a sample of the cells, microorganisms, fluids, and particles present

**bronchogenic carcinoma** a malignant tumor originating in the bronchi of the lungs

**bronchus** one of the larger passages conveying air within the lungs

**buccal** of or pertaining to the cheek

**buccal cavity** the space within the mouth that lies between the teeth and the cheek

**Burkitt lymphoma** a form of non-Hodgkin lymphoma that originates in B cells (B lymphocytes)

## C

**C cell** a type of cell of the thyroid gland that secretes calcitonin (also called parafollicular cells)

**calcitonin** a hormone that participates in regulation of calcium metabolism

**cancer** a general term used to indicate any of various types of malignant tumors

**candidiasis** an infection caused by the yeast-like fungus *Candida albicans*, most commonly involving the skin, mouth, respiratory tract, and vagina

**capsid** the protein outer shell of a virus

## Report on Carcinogens, Fourteenth Edition

**carbide** a chemical compound consisting of carbon and a more electrically positive element

**carbonization** the process of converting an organic compound to carbon or to a residue derived from carbon

**carcinogen** any substance that causes cancer

**carcinogenesis** the process by which normal tissue becomes cancerous

**carcinogenic** having the power, ability, or tendency to cause cancer

**carcinogenicity** the power, ability, or tendency to cause cancer

**carcinoma** a malignant tumor originating from epithelial tissue

**carcinoma *in situ*** a carcinoma that has remained in the place where it originated and has not spread to adjacent tissues

**cardiac** of or pertaining to the heart

**cardiovascular** of or pertaining to the heart and blood vessels

**capillaries** the smallest blood vessels, which form a network for the exchange of oxygen, metabolic waste products, and carbon dioxide between blood and tissue cells

**carina** a projection of the lowest tracheal cartilage where the airway divides into the right and left primary bronchi

**cartilage** a firm but flexible connective tissue that forms most of the embryonic skeleton and in adults is found in the larynx, respiratory tract, external ear, and joints

**case-control study** a study in which selected individuals with a specific diagnosis (cases) are compared with individuals without that diagnosis (controls) from the same population

**case-comparison study** a term previously used as a synonym for case-control study

**case series** a collection of patients with common characteristics, used to describe some aspect of a disease, treatment, exposure, or diagnostic procedure

**catabolism** the breakdown of complex molecules in living organisms to form simpler ones

**catalysis** the acceleration of a chemical reaction by a catalyst

**catalyst** a material that increases the rate of a chemical reaction while remaining unchanged at the end of the reaction

**catalyze** to increase the rate of a chemical reaction by functioning as a catalyst

**cation** an ion carrying a positive electrical charge

**causalgia** persistent pain resulting from injury to a peripheral nerve (also known as complex regional pain syndrome)

**cecum** the sac-like part of the large intestine between the small intestine and the colon

**cell** (in biology) the smallest structural and functional unit of a living organism, consisting of cytoplasm and a nucleus enclosed in a membrane

**cellular** (in biology) of, pertaining to, or consisting of cells

**cemented carbide** carbide particles embedded in a matrix of binding metal

**central nervous system** the part of the nervous system consisting of the brain and spinal cord

**cerebral ependymoma** a tumor originating from cells lining the central canal of the spinal cord or the ventricles of the brain

**cerebrospinal fluid** a watery fluid found in the brain and around the spinal cord

**cervix** a neck-like structure or constriction; most often used to refer to the neck of the uterus

**cetane number** an indicator of the combustion speed of diesel fuel (the diesel equivalent of octane)

**characteristic hazardous waste** a solid waste having the property of ignitability, corrosivity, reactivity, or toxicity, as defined under the Resource Conservation and Recovery Act

**chelating agent** a substance whose molecules can form several bonds to a single metal ion; can be used to remove an ion from participation in biological reactions and is often used to remove toxic metals from the body

**chelation** formation of a complex involving a metal ion and a chelating agent

**Chemical Data Reporting Rule** periodic reporting by manufacturers to the U.S. Environmental Protection Agency of exposure-related information on the types, quantities, and uses of chemical substances produced domestically and imported into the United States (formerly the Inventory Update Rule)

**chemical intermediate** a chemical formed or used during the process of producing another chemical

**chemiluminescent immunoassay** a technique in which antibodies are detected by labeling of the antigen or antibody with a molecule capable of emitting light during the chemical reaction between the antigen and antibody

**chemosterilant** a chemical compound that causes an organism to become sterile

**chemotherapeutic** related to the treatment of disease with chemical agents

**chemotherapy** treatment of disease with chemical agents

**chiral** (of a molecule) asymmetric in such a way that a structure and its mirror image cannot be superimposed

**chlamydia** a sexually transmitted infection caused by the bacterium *Chlamydia trachomatis*

**cholangio-** (*prefix*) of or pertaining to the bile ducts

**cholesteatoma of the nasal cavity** a cyst resulting from the abnormal formation of keratin

**choroidal melanoma** a malignant tumor arising from melanocytes in the choroid (the middle, vascular layer of the eyeball)

**chromatid** one copy of a newly copied chromosome, still joined to the other copy

**chromophobe adenoma** a benign pituitary-gland tumor that does not secrete hormones

**chromosomal aberration** any abnormality in chromosome number or structure

**chromosome** a thread-like structure in the nucleus of a cell made of protein and DNA and containing genetic instructions encoded in genes

**chronic** continuing for a long period of time; in testing of rodents, refers to exposure schedules longer than three months

**circulatory system** the system involved in circulating blood and lymph throughout the body, consisting of the cardiovascular system (blood, blood vessels, and the heart) and the lymphatic system (lymph, lymphatic vessels, and lymph nodes)

**cirrhosis of the liver** a progressive disease in which normal liver tissue is replaced with scar tissue, impairing liver function

**cis-activation** activation of a gene by an activator DNA sequence located on the same chromosome as that gene

**clade** a group of genotypes that share a common ancestor

**Clara cells** secretory cells found in the epithelium of the terminal bronchioles

**clastogen** an agent with the ability to cause chromosome breaks

**clastogenic** able to cause chromosome breaks

**clitoral glands** in rodents, sebaceous glands of the folds of skin covering the clitoris, equivalent to the foreskin of the penis (also called the preputial glands of the clitoris)

**coal tar** a thick black liquid produced by distilling coal

**cobalt–tungsten carbide hard metal** a composite of tungsten carbide particles with a metallic cobalt powder as a binder, pressed into a compact, solid form at high temperatures (also called hard metal)

## Report on Carcinogens, Fourteenth Edition

**co-carcinogenicity** enhancement of the activity of a carcinogen by another agent that is not itself carcinogenic

**codon** a sequence of three adjacent bases in a strand of DNA or RNA that codes for a specific amino acid

**coenzyme** a nonprotein compound that is necessary for the functioning of an enzyme

**cofactor** a contributory cause of a disease

**cohort study** a study that compares a group of people with a second group similar except with respect to one factor (usually the suspected cause of a disease)

**colitis** inflammation of the colon

**colon** the part of the large intestine extending from the cecum to the rectum

**colorectal** of or pertaining to the colon and rectum or to the entire large intestine

**colposcopic examination** the use of a special illuminated magnifying glass to examine the vulva, vagina, and cervix

**commercial grade** the degree of purity of a chemical produced for and adequate for commercial uses

**condylomata acuminata** genital warts, caused by certain subtypes of human papillomavirus

**confidence interval** a range of values defined so that there is a specified probability that the value of a parameter lies within it (usually 95%)

**confounding factor** a factor that obscures the relationship between a presumed cause and its presumed effect; the effect of the confounding factor cannot be logically separated from the effect(s) of other causal factor(s)

**congener** one of two or more chemicals related to each other by origin, structure, or function

**congenital** existing from birth

**conjugated** bound together; in organic chemistry, a molecular structure or substructure containing alternating double and single bonds between pairs of adjacent atoms

**conjugation** the process of becoming conjugated

**conjunctiva** the membrane that lines the eyelid and covers the front part of the eyeball

**connective tissue** structural tissue that connects, supports, or surrounds other tissues or organs

**contaminant** an impurity; in the environment, a chemical that is not ordinarily present and that may have deleterious effects on organisms

**control group** in a study, a group of subjects closely resembling the treatment group, but not receiving the treatment, and thereby serving as a comparison group against which to measure the effects of the treatment

**controls** in a study, members of a control group (also called control subjects)

**copolymer** a polymer consisting of two or more different monomers

**core proteins** (in viruses) proteins directly associated with the nucleic acid of viruses

**cortex** the outer layer of an organ

**cortical** of or pertaining to the cortex

**corticosteroid** a drug used to reduce inflammation

**covalent binding** formation of a chemical bond that involves the sharing of a pair of electrons between atoms

**covalently** through the formation of a covalent bond

**creatinine** a waste product of muscle metabolism, measured in blood and urine to assess kidney function

**cross-linking** 1. the extension of chemical bonds in more than one direction, which strengthens polymers 2. the reaction of an agent with two different positions in a DNA molecule or with both DNA and protein, to form an adduct

**cryptococcosis** an infection caused by inhaling the fungus *Cryptococcus neoformans*, which may spread from the lungs and infect the membrane surrounding the brain and spinal cord

**cryptosporidiosis** an intestinal infection caused by the parasite *Cryptosporidium parvum*

**cystadenocarcinoma** an adenocarcinoma that forms cysts

**cystadenoma** an adenoma that forms cysts

**cytochrome** a class of proteins containing the heme group, whose main function is electron transport

**cytochrome P450** a group of enzymes involved in drug metabolism and found in high levels in the liver

**cytogenetic** of or pertaining to the cellular constituents involved in heredity

**cytokine** any of a number of hormone-like substances secreted by cells of the immune system that act nonenzymatically to regulate immune responses

**cytomegalovirus** a common herpesvirus that rarely causes symptoms but may cause serious disease in infants or in adults with weakened immune systems

**cytopathogenic** pertaining to an infectious agent that causes a diseased condition in cells, or to the effects of such an agent

**cytoplasm** the contents of a cell outside of the nucleus

**cytosine** one of the two pyrimidine bases in DNA; pairs with guanine

**cytosol** the fluid portion of the cytoplasm

**cytosolic** of or pertaining to cytosol

**cytotoxic** toxic to cells

**cytotoxicity** the ability to have toxic effects on cells

**cytotoxic T cell** a type of immune cell that kills cancerous, infected, or damaged cells

## D

**dam** the female parent of a domestic animal

**defoliant** a chemical spray or dust that causes plants to lose their leaves prematurely

**dehydrogenation** the removal of one or more hydrogen ions or protons from a molecule

**deliquescent** tending to melt or dissolve; especially, tending to gradually dissolve and liquefy by attracting and absorbing moisture from the air

**density** amount of mass per unit volume; for solids and liquids, generally expressed in grams per cubic centimeter at room temperature; for gases, generally the calculated ideal gas density in grams per liter at 25°C and one standard atmosphere of pressure

**dermal** of or pertaining to the skin

**dermatitis** inflammation of the skin

**dermatomyositis** an inflammation of the skin, subcutaneous tissue, and muscles, involving death of muscle fibers

**dermis** the inner layer of the skin

**diabetes** a disorder of carbohydrate metabolism characterized by inadequate secretion or utilization of insulin, excessive urination, and excessive amounts of sugar in the blood and urine

**diamine** an organic compound containing two amine groups

**diazo** pertaining to a compound containing two linked nitrogen atoms as a terminal functional group

**differentiated cells** cells that have lost or have a limited capacity to transform into other cell types (in contrast to stem cells)

## Report on Carcinogens, Fourteenth Edition

**dimer** a chemical structure formed from two similar subunits

**dissociation constant ( $pK_a$ )** a measure of the strength of an acid based on the equilibrium constant ( $K_a$ ) for dissociation of a weak acid in a water solution

**dissolution** the act or process of dissolving

**distant tumor** a tumor located elsewhere than at the site where the abnormal growth originated

**distillation** separation or purification of the components of a material by gradually increased heating and removal of the components that vaporize at different boiling points

**dominant lethal mutation assay** an assay that identifies mutagens by measuring a chemical's ability to cause embryonic death due to chromosome breakage in parental germ cells

**dorsal** pertaining to the back or posterior of an organ or organism

**dose-response relationship** a relationship between the dose or concentration of a chemical, biological, or physical agent to which an organism is exposed and the degree of the monitored effect of that agent

**duodenum** the first section of the small intestine, extending from the stomach to the jejunum

**dysplasia** abnormal tissue growth or development

### E

**eczema** an inflammation of the outer layer of skin, characterized by redness, itching, crusting, and scaling

**edema** abnormal accumulation of fluid in the spaces between the cells or in body cavities

**effluent** wastewater discharged from a treatment plant, sewer, or industrial outfall into the environment, usually to surface waters

**effusion** the escape of fluid from blood or lymph vessels into a body cavity

**electrolyte** a substance that dissociates into ions when melted or in solution, thereby becoming capable of conducting an electric current

**electron** a stable negatively charged particle that is a fundamental constituent of matter

**electrophile** the electron-attracting atom or agent in an organic reaction

**electrophilic** pertaining to an electrophile

**emulsifier** an agent that promotes the dispersion of an insoluble fluid into another fluid

**enantiomer** either of a pair of compounds whose molecular structures have a mirror-image relationship to one another

**endemic** constantly present in a community

**endocrine** of or pertaining to glands that secrete hormones directly into the circulatory system

**endocytosis** a process by which a cell transports molecules into the cell by engulfing them with the cell membrane

**endogenous** originating within an organism

**endogenously** derived or produced internally

**endometrium** the mucous-membrane lining of the uterus

**end use** the final intended purpose for an item or substance

**enveloped virus** a virus that has an outer wrapping, or envelope

**environmental fate** the distribution and transformation of a chemical from its first release until its ultimate removal from or recycling through the environment

**enzyme** a protein that is capable of accelerating a particular biochemical reaction; a biological catalyst

**enzyme-linked immunosorbent assay** a technique for measuring the concentration of an antigen or antibody through a reaction that yields a colored product

**eosinophilic granuloma complex** a group of inflammatory skin lesions in cats

**epidemiology** the study of the occurrence and distribution of disease in populations

**epidermis** the outer layer of the skin

**epidermoid tumor** squamous-cell carcinoma (also called epidermoid carcinoma)

**epididymis** a coiled tube that stores sperm newly created by the testis

**epigenetic** pertaining to changes in gene expression or phenotype caused by mechanisms other than changes in the underlying DNA sequence

**epilepsy** a neurological disease usually characterized by seizures involving convulsions and loss of consciousness

**epithelial** of or pertaining to or consisting of epithelium

**epithelium** tissue that lines the body surface and cavities, consisting of cells joined by small amounts of cementing substances

**epoxidized soybean oil** a collection of organic compounds from soybean oil chemically converted for use as a plasticizer and stabilizer in polyvinyl chloride plastics

**erythema** redness of the skin produced by congestion of the capillaries

**erythrocytes** red blood cells

**esophagus** the passage through which food travels from the throat to the stomach

**esthesioneuroepithelioma** a nasal tumor consisting of cells of sensory-nerve epithelium (also called olfactory neuroblastoma)

**estrogen** any of a group of female sex hormones

**estrus** the recurrent, restricted period of sexual receptivity in female mammals other than humans

**ethereal** of, pertaining to, or containing ether

**etiologic** assigning or seeking to assign a cause

**eukaryote** an organism whose cells contain a nucleus and undergo mitosis; includes all organisms except bacteria and archaea

**eukaryotic** of or pertaining to a eukaryote

**Ewing sarcoma** a malignant tumor of the bone

**exocrine** of or pertaining to glands that secrete their products onto an epithelial surface via a duct

**exogenous** developed or originating outside of the body or biological system

**extrahepatic** located or originating outside of the liver

**extranodal lymphoma** any lymphoma originating outside of the lymph nodes

**exposure-response relationship** a relationship between the dose or concentration of a chemical, biological, or physical agent to which an organism is exposed and the degree of the monitored effect of that agent

### F

**Fanconi anemia** a congenital disorder resulting in reduced numbers of red and white blood cells and platelets and associated with heart, kidney, and limb malformations, skin pigment changes, spontaneous chromosome breakage, and a predisposition to leukemia

**feedstock** the raw material supplied to a processing plant to create an end product

**Fenton reaction** the oxidation of iron(II) by hydrogen peroxide to form a hydroxyl radical

**ferrous** of, pertaining to, or containing iron

**ferruginous body** a mineral particle to which pulmonary macrophages have added an iron protein coat; used as an indicator of exposure to specific dusts or fibers

**fiber** a particle with a length-to-width ratio of at least 3:1

**fibroadenoma** a benign tumor formed of glandular and connective tissue

**fibroblast** the most common type of connective-tissue cell

**fibroma** a benign tumor originating in fibrous connective tissue

**fibrosarcoma** a malignant tumor originating in fibrous connective tissue

**fibrosis** thickening and scarring of connective tissue, usually as a result of injury

**flash point** the lowest temperature at which enough vapor of a combustible liquid forms to ignite momentarily in air

**flocculant** a substance that promotes the clumping of particles

**flocculation** the process by which fine particles in a liquid clump together

**flux** 1. the rate of mass flow across a unit area 2. chemical agent used as a cleaning, purifying, or flowing agent in smelting, welding, soldering, or brazing.

**follicular cell** a modified epithelial cell that secretes fluid

**follicular dendritic cell** a cell of the immune system that is found in lymphoid tissue and is able to trap antigens bound to antibodies

**forestomach** a non-glandular expansion of the alimentary canal between the esophagus and the glandular stomach, found in rodents, but not in humans

**formalin** a solution of formaldehyde in water typically containing 37% formaldehyde by mass and 10% to 15% methanol as a stabilizer

**free radical** an atom or molecule that has at least one unpaired electron and is therefore unstable and highly reactive (also called a radical)

**frit** a wholly or partially fused material used as a basis for glazes or enamels

**fumigant** a pesticide in vapor or gaseous form used to kill pests or disinfect materials

**fungi** the plural of “fungus”

**fungicide** a pesticide used to control, prevent, or kill fungi

**fungus** a lower plant that feeds on other organic matter and lacks the chlorophyll and tissue differentiation of higher plants

## G

**gallbladder** a small organ where bile from the liver is stored before being released into the small intestine

**gastric** of or pertaining to the stomach

**gastrointestinal tract** the part of the digestive system consisting of the stomach and intestines

**gavage** in studies with animals, the introduction of material through a tube passed through the mouth into the stomach (also called gastric, stomach, or oral intubation)

**gene** a unit of hereditary information; the portion of a DNA molecule that contains, coded in its nucleotide sequence, the information determining the sequence of a single chain of amino acids that make up a protein or part of a protein

**genitourinary** of or pertaining to the genital and urinary organs

**genome** the complete set of genes or genetic material present in a cell or organism

**genomic** of or pertaining to the genome

**genomics** the study of the structure, function, evolution, and mapping of genomes

**genotoxic** having the ability to damage a DNA molecule

**genotoxicity** the ability to damage a DNA molecule

**genotype** the genetic constitution of an individual organism

**germ cells** cells that give rise to sperm and eggs

**gestation** pregnancy; in mammals, the period from fertilization of the egg to birth

**gestational trophoblastic tumor** a rare tumor arising during pregnancy from cells that would normally develop into the placenta

**gland** an aggregation of cells specialized to secrete or excrete certain biologically important materials

**glandular** of or pertaining to a gland or glands

**glandular stomach** the muscular sac between the esophagus and the small intestine containing glandular tissue that secretes mucus, hydrochloric acid, and digestive enzymes

**glass fiber** a general term referring to reinforcing glass filament, glass wool, or superfine glass fiber

**glass wool** a fibrous product formed by blowing or spinning molten glass and collecting the resultant fibers as a tangled mat

**glial cells** cells that form the interstitial tissue of the brain, spinal cord, and retina (the light-sensitive layer of tissue at the back of the eyeball)

**glioma** any tumor derived from glial cells

**glomerulonephritis** any of several diseases characterized by injury to the part of the kidney that filters blood to form urine

**glucagon** a hormone secreted by the islet cells of the pancreas that works to raise the level of glucose in the bloodstream

**glucagonoma** a glucagon-secreting tumor of the islet cells of the pancreas

**glutathione** a compound that functions as a coenzyme in oxidation–reduction reactions in cells

**glutathione S-transferase** any member of a family of enzymes involved in reactions that play a key role in detoxification of many substances

**gonadotropin** any hormone that acts on the reproductive organs or system

**gonorrhea** a sexually transmitted disease caused by the bacterium *Neisseria gonorrhoeae* that if untreated can lead to severe pelvic infections and sterility

**grand mal epilepsy** a form of epilepsy characterized by seizures involving loss of consciousness and generalized convulsions

**granulocytes** white blood cells characterized by the presence of granules containing enzymes and forming part of the immune system

**granulosa-cell tumor** a slow-growing cancer originating in the cells that surround the eggs within the ovaries

**guanine** one of the two purine bases in DNA; pairs with cytosine

## H

**half-life** the time required for the amount of a substance to be reduced to half its initial value through degradation or by elimination from an organism

**halogenated** denoting a chemical compound that includes a halogen (fluorine, chlorine, bromine, iodine, or astatine)

**Harderian gland** an accessory tear gland in all vertebrate animals that have a third eyelid (the nictitating membrane)

**hard metal** a composite of tungsten carbide particles with a metallic cobalt powder as a binder, pressed into a compact, solid form at high temperatures (also called cobalt–tungsten carbide hard metal)

**hard palate** the bony front portion of the partition separating the mouth from the nasal cavity

**healthy-worker effect** the phenomenon whereby workers usually have overall death rates lower than those of the general population, because the severely ill and disabled are generally excluded from employment

**helicase** an enzyme that acts to unwind the double-stranded helical structure of nucleic acids

**hemangioendothelioma** a tumor originating in cells derived from the blood vessels and lining irregular blood-filled spaces (when malignant, also called hemangiosarcoma)

**hemangioma** a benign tumor made up of newly formed blood vessels

**hemangiosarcoma** a malignant tumor originating in cells derived from the blood vessels and lining irregular blood-filled spaces

**hematocrit** the percentage of red blood cells in whole blood, by volume

**hematopoietic** pertaining to the formation of blood or blood cells

**heme** an iron compound that makes up the pigment portion of hemoglobin and is responsible for its oxygen-carrying properties

**hemodialysis** a medical procedure to remove waste products from the blood of a person with kidney failure (also called kidney dialysis)

**hemoglobin** the respiratory protein of red blood cells that transports oxygen from the lungs to the tissues and gives blood its red color

**hemolymphoreticular** of or pertaining to the network of cells and tissues of the blood and lymph nodes found throughout the body

**hemolytic anemia** a disease characterized by the abnormal breakdown of red blood cells

**Henry's law** the relationship that defines the partition of a soluble or partially soluble chemical between its gas and solution phases

**Henry's law constant** the ratio of the concentration of a chemical in solution to its equilibrium partial pressure in the gas phase; increases with decreasing solubility

**hepatectomized** having had the liver removed

**hepatic** of or pertaining to the liver

**hepatitis** an inflammation of the liver

**hepatoblastoma** a malignant liver tumor occurring in young children, consisting of embryonic tissue

**hepatocellular** of or pertaining to cells of the liver

**hepatocellular carcinoma** a malignant liver-cell tumor

**hepatocyte** a parenchymal liver cell

**hepatotoxic** a substance that is toxic to the liver

**herbicide** a substance that is toxic to plants, used to destroy unwanted vegetation

**high-production-volume chemical** as defined by the U.S. Environmental Protection Agency, any chemical produced in or imported into the United States in a quantity of 1 million pounds or more per year

**high-throughput screening** the use of automated methods to screen many chemicals at once for indicators of toxicity

**histiocytic necrotizing lymphadenitis** a benign and self-limiting disorder characterized by swollen lymph glands in the neck, with flu-like symptoms

**histiocytoma** a benign skin tumor originating in cells of the reticuloendothelial system

**histological** pertaining to the study of the microscopic structure of animal and plant tissues

**histology** the study of the microscopic structure, composition, and function of tissues

**histones** proteins found in the nuclei of cells that help package DNA into chromosomes

**histoplasmosis** a respiratory infection caused by inhaling the spores of the fungus *Histoplasma capsulatum*

**Hodgkin disease** a form of malignant lymphoma characterized by painless progressive enlargement of the lymph nodes, spleen, and general lymphoid tissue (also called Hodgkin lymphoma)

**hormone** any of various chemical substances produced by the endocrine glands and that have specific regulatory effects on the activity of certain organs

**host antigen** a molecule that is capable of inducing an immune response by the same organism that produced the molecule (i.e., an autoimmune response)

**hyaline vascular Castleman disease** a form of Castleman disease characterized by increased numbers of vessels in the lymph nodes and damage to the vessels

**hydrofluorocarbon** any of several simple gaseous compounds that contain carbon, fluorine, and hydrogen

**hydrolysis** breaking apart of a chemical compound through reaction with water

**hydrolyze** to subject to hydrolysis

**hydroxyl group** the atom group –OH

**hydroxyl radical** the highly reactive neutral form of the hydroxide ion (OH<sup>-</sup>)

**hydroxylation** introduction of a hydroxyl group into an organic chemical compound

**hypermethylation** an increased level of methylation

**hyperplasia** abnormal proliferation of normal cells in normal arrangement in a tissue

**hyperthyroidism** excessive activity of the thyroid gland

**hypertrophy** an increase in the volume of a tissue or organ produced entirely by the enlargement of existing cells

**hypnotic** sleep-inducing; a drug that induces sleep

**hypogonadism** decreased functional activity of the testes or ovaries, resulting in retardation of growth and sexual development

**hypoxia** a condition in which the body tissues do not receive enough oxygen

**hypoxia-inducible factor** a transcription factor that responds to decreased levels of oxygen available in a cell by activating genes to produce proteins that increase oxygen delivery or help the organism adapt to low oxygen levels

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I

**iatrogenic** of or pertaining to illness caused by medical examination or treatment

**icosahedral** having 20 equilateral triangular surfaces, 12 corners, and 30 edges

**ileum** the lowest section of the small intestine, between the jejunum and the large intestine

**immortalize** to enable cells to continue to proliferate indefinitely

**immune response** the mechanisms by which the body recognizes and defends against pathogens and foreign substances

**immune surveillance** patrolling of the body by the immune system to detect and destroy invading pathogens, and possibly host cells that become cancerous

**immune system** the system of biological structures and processes within an organism that protects against disease

**immunoassay** a procedure for detecting or measuring specific proteins or other substances through their properties as antigens or antibodies

**immunodeficiency** weakening or absence of the immune response due to reduced activity or decreased numbers of lymphoid cells

**immunodominant** pertaining to the part of an antigen that is most easily recognized by the immune system and thus most influences the specificity of the induced antibody

**immunofluorescence assay** a technique that uses a fluorescent dye to detect the presence of specific antibodies in blood serum

**immunogenic** pertaining to a substance with the ability to cause an immune response

**immunoglobulin** any member of a class of proteins produced by lymphocytes that function as antibodies, recognizing, attaching to, and helping to destroy foreign substances

**immunomodulator** a chemical agent that alters the immune response or the functioning of the immune system

**immunosuppression** artificial prevention or reduction of the natural immune response, also used to describe the condition of acquired or congenitally lowered immune response

**implantation** insertion of a mass of material into an organism at a fixed site from which the mass does not move except by dissolving in the body fluids

**incidence** the rate at which new cases of a disease occur

**inhalation** drawing of air or other substances into the lungs

**inhalation reference concentration** as defined by the U.S. Environmental Protection Agency, the concentration of a chemical that one can breathe every day for a lifetime that is not anticipated to cause harmful non-cancer health effects

**inhalation unit risk** as defined by the U.S. Environmental Protection Agency, an estimate of the increased cancer risk from inhalation exposure to a concentration of 1  $\mu\text{g}$  per cubic meter for a lifetime

**initiation** permanent alteration of a cell or group of cells, resulting in formation of tumors if the cells divide

**initiator** a chemical that permanently alters a cell or group of cells, resulting in formation of tumors if the cells divide

**injection site** the site, usually in the skin, at which a substance is injected into an organism

**inorganic** pertaining to materials or chemicals that do not contain carbon

**in situ** confined to the site of origin; "carcinoma *in situ*" refers to noninvasive cancer

**in situ hybridization** a technique to identify a specific DNA or RNA sequence in a portion or section of tissue by using a labeled complementary nucleic acid strand.

**insoluble** incapable of being dissolved in a particular solvent

**insulin** a hormone secreted by the islet cells of the pancreas that promotes the absorption of glucose from the bloodstream into muscles and fat tissue

**insulinoma** a usually benign insulin-secreting tumor of the islet cells of the pancreas

**integrase** an enzyme produced by a retrovirus that enables its genetic material to be integrated into the DNA of the infected cell

**interferon** a protein released by cells, usually in response to the entry of a virus, that has the ability to inhibit viral replication

**International Organization for Standardization** a nongovernmental organization made up of representatives from national standards bodies that serves as an international standard-setting body

**interstitial** pertaining to or situated in the spaces between tissues or the parts of an organ

**intra-abdominal** within the abdomen

**intra-bronchial** within a bronchus

**intracellular** located or occurring within a cell or cells

**intramedullary injection** injection into the bone marrow

**intramuscular injection** injection into muscle tissue

**intraperitoneal injection** injection into the peritoneal cavity

**intrapleural injection** injection within the pleura

**intrathoracic implantation** implantation within the thoracic cavity (the area that contains the heart and lungs)

**intratracheal instillation** introduction directly into the trachea (also called intratracheal administration or injection)

**intravaginal** within the vagina

**intravenous injection** injection into a vein

**intravesicular instillation** introduction directly into the urinary bladder (also called intravesicular administration or injection)

**in utero** within the uterus

**invasive** spreading beyond the body tissue of origin

**Inventory Update Rule** the former name of the Chemical Data Reporting Rule

**in vitro** pertaining to a biological process taking place in a test tube, culture dish, or elsewhere outside a living organism

**in vivo** pertaining to a biological process taking place in a living organism

**ion** an atom or molecule that has a net positive or negative electric charge as a result of losing or gaining one or more electrons, and thus has unequal numbers of protons and electrons

**ion channel** a protein that acts as a pore in a cell membrane and permits the selective passage of ions into the cell

**ionizing** (*adjective*) having the ability to convert an atom or molecule into an ion or ions, typically by removing one or more electrons

**iron-deficiency anemia** a disease characterized by low or absent stores of iron in the body and low concentrations of iron in the blood

**islet cells** secretory cells found in the endocrine portion of the pancreas

**isomer** one of two or more forms of a chemical that have the same chemical formula but different structural arrangements

**isotope** one of two or more forms of the same chemical element that contain different numbers of neutrons

**isozyme** any of the chemically distinct forms of an enzyme that perform the same biochemical function

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## J

**jaundice** a yellowish staining of the skin, whites of the eyes, and deeper tissues caused by an excess of bilirubin in the blood

**jejunum** the middle section of the small intestine, between the duodenum and ileum

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## K

**Kaposi sarcoma** a malignant tumor occurring in the skin, in the lining of the mouth, nose, or throat, or in other organs caused by infection with Kaposi sarcoma herpesvirus (human herpesvirus type 8)

**keratin** a fibrous protein that is the key structural component of the outer layers of the skin, hair, and nails

**keratinizing squamous-cell carcinoma** squamous-cell tumors containing keratin in the cytoplasm

**keratoacanthoma** a benign skin tumor closely resembling squamous-cell carcinoma and having a central keratin mass

**koilocyte** a squamous epithelial cell that has undergone structural changes as a result of infection with human papillomavirus

**koilocytosis** the presence of koilocytes in a biological specimen

$K_{ow}$  the octanol-water partition coefficient, representing the ratio of the solubility of a compound in octanol (a nonpolar solvent) to its solubility in water (a polar solvent)

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## L

**lactation** the secretion of milk

**laminating** uniting superimposed layers of a material or materials

**laryngeal** of or pertaining to the larynx

**larynx** a passage located between the pharynx and the trachea, containing the vocal cords (also called the voice box)

**latency** 1. the time between exposure to a carcinogen and the onset of cancer 2. the part of the viral life cycle when the virus lies dormant and does not reproduce itself or cause disease symptoms



## Report on Carcinogens, Fourteenth Edition

**latent virus** a virus that remains in the host organism without undergoing replication

**leachate** the liquid produced from the decomposition of waste in a landfill

**leiomyoma** a benign tumor derived from smooth muscle

**leiomyosarcoma** a malignant tumor derived from smooth muscle

**leukemia** a cancer of the blood-forming tissues (the bone marrow and the lymphatic system) characterized by a marked increase in the number of abnormal white blood cells (leukocytes) in the bone marrow and peripheral blood

**leukocyte** a white blood cell (lymphocyte, granulocyte, or monocyte)

**Leydig cell** a cell in the testes that secretes the hormone testosterone

**lipid** any of the naturally occurring fats or waxes

**lipophilic** tending to combine with or dissolve in lipids

**lipophilicity** the ability of a chemical compound to combine with or dissolve in lipids

**liposomal** of or pertaining to an artificially prepared spherical vesicle composed of a lipid bilayer that can be used as a vehicle for administration of nutrients or drugs

**listed hazardous waste** a solid waste from common manufacturing and industrial processes that is listed as hazardous under the Resource Conservation and Recovery Act

**locus** in genetics, the specific location of a gene on a chromosome

**log octanol-water partition coefficient (log  $K_{ow}$ )** the logarithm of the octanol-water partition coefficient ( $K_{ow}$ ); used as a relative indicator of the tendency of an organic compound to adsorb to soil

**loss of heterozygosity** loss of the normal allele at a gene locus with one normal and one abnormal allele

**lupus** a chronic inflammatory disease caused by autoimmunity

**lymph** a clear liquid collected from tissues throughout the body and returned to the blood via the lymphatic system

**lymphatic** of or pertaining to the lymph and lymph nodes and vessels

**lymphoblast** an immature lymphocyte

**lymphocyte** a mononuclear, nongranular white blood cell that is produced primarily by lymphoid tissue and participates in the immune response

**lymphocytic leukemia** leukemia involving immature white blood cells (lymphoblasts), usually of B-cell origin (also called lymphoblastic or lymphoid leukemia)

**lymphohematopoietic** pertaining to or involved in the production of lymphocytes and cells of blood, bone marrow, spleen, lymph nodes, and thymus

**lymphoid** of or pertaining to the organs and tissues of the lymphatic system

**lymphoma** any malignant tumor originating in lymphoid tissue

**lymphopoietic** pertaining to the formation of lymph

**lymphoreticular** of or pertaining to the cells or tissues of both the lymphatic and reticuloendothelial systems

**lymphosarcoma** a diffuse lymphoma

**lysosomal** of or pertaining to lysosomes

**lysosome** an organelle in eukaryotic cells that contains digestive enzymes that break down food particles, worn-out organelles, and bacteria and viruses

**lytic virus** a virus that uses the cellular machinery of the host organism to replicate itself and kill the host cell, releasing a new generation of viruses

## M

**macroalga** an alga large enough to be visible to the naked eye

**macrophage** a type of white blood cell that engulfs and digests debris and foreign particles

**malignant** tending to become progressively worse; life-threatening

**mammal** any of a class of warm-blooded higher vertebrates that nourish their young with milk secreted by mammary glands; includes humans

**mammalian** of or pertaining to mammals

**mammary** of or pertaining to the breast

**mastodynia** pain in the breast

**medullary** of or pertaining to the inner core of certain organs or body structures

**megakaryocyte** a large cell of the bone marrow that gives rise to platelets

**melanin** the pigment that gives skin, hair, and eyes their color

**melanocytic** pertaining to cells that produce the pigment melanin

**melanoma** any tumor consisting of melanin-pigmented cells

**melanotic** characterized by the presence of melanin

**meningioma** a slow-growing tumor of the meninges (the membrane covering the brain and spinal cord)

**mesenchymal** of or pertaining to the embryonic tissue that gives rise to connective tissue, blood cells, blood vessels, lymphatic cells, and reticuloendothelial cells

**mesentery** a membranous fold attaching various organs to the body wall

**mesothelioma** a tumor of the lining of the chest or abdomen

**meta-analysis** pooled statistical analysis of several similar studies

**metabolism** the range of biochemical processes that occur within living organisms, including both the buildup and breakdown of substances

**metabolite** a substance produced through metabolism

**metaplasia** the change of a mature cell in a given tissue to a cell type that does not normally occur in that tissue

**meta-relative risk** the relative risk calculated in a meta-analysis

**metastasis** the transfer of cancer cells from their site of origin to another part of the body not connected with the site of origin

**methemoglobin** a form of hemoglobin that cannot carry oxygen, as the result of oxidation of the iron atom

**methemoglobinemia** the presence of an abnormally large amount of methemoglobin

**methylation** addition of a methyl group ( $-CH_3$ ) to a molecule

**microbe** a microorganism (bacterium, fungus, or protozoan)

**microbial** of or pertaining to microbes

**microglioma** a tumor originating from microglial cells (small cells forming part of the structure of the central nervous system)

**microinvasive** denoting a carcinoma *in situ* that invades adjacent tissues at the microscopic level

**micronuclei** the plural of "micronucleus"

**micronucleus** a nucleus separate from, and additional to, the main nucleus of a cell, produced during cell division by lagging chromosomes or chromosome fragments

**microRNA** a small, non-coding RNA molecule that prevents production of a particular protein by binding to and destroying the messenger RNA from which the protein would have been produced

**microsomal** of or pertaining to microsomes

**microsomes** vesicle-like fragments of endoplasmic reticulum formed from eukaryotic cells disrupted in the laboratory, containing cytochrome P450 and used to mimic mammalian metabolism *in vitro*

**mineral wool** generic name for fiber materials formed by spinning or drawing molten or synthetic minerals

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**miscible** capable of being mixed without separation into distinct components

**mitochondria** organelles that occur in the cytoplasm of eukaryotic cells, containing genetic material and enzymes important for cell metabolism, including those that convert food to energy

**mitogen** a substance that induces mitosis

**mitosis** in cell division, the separation of duplicated chromosomes into two genetically identical daughter nuclei

**mitotic** pertaining to mitosis

**molecular pathway** a series of actions among molecules in a cell that leads to a certain cell product or function

**molecular weight** the sum of the atomic weights of all the atoms in a molecule

**molecule** an electrically neutral group of two or more atoms held together by chemical bonds

**monoclinic** denoting a crystal having three axes of unequal length, with two perpendicular intersections and one oblique intersection

**monoclonal** derived from a single ancestral cell

**monocytes** mononuclear phagocytic white blood cells

**monomer** a chemical subunit that is joined to other similar subunits so as to produce a polymer

**mononuclear** having one nucleus

**mononuclear-cell leukemia** a type of lymphocytic anemia common in rats, but rarely seen in humans (also called large-cell granular lymphocytic leukemia)

**mononucleosis** a disease characterized by excess monocytes in the blood, with flu-like symptoms

**monovalent** an atom, ion, or chemical group having a valence of 1

**mucous** containing, producing, or secreting mucus

**multiple myeloma** malignant tumors originating from mature lymphocytes in the bone marrow

**mutagen** any agent with the ability to cause mutations

**mutagenicity** the ability to cause mutations

**mutation** a permanent, transmissible change in genetic material

**myasthenia gravis** a neurological disorder causing muscular weakness and fatigue

**mycobacterium avium complex** an infection caused by two similar bacteria, *Mycobacterium avium* and *M. intercellulare*, occurring in people with compromised immune systems

**mycosis fungoides** a chronic malignant T-cell lymphoma of the skin

**myelocytic leukemia** leukemia arising from non-lymphocyte white blood cells in the bone marrow

**myelodysplastic syndromes** a group of disorders in which bone marrow does not produce enough mature blood cells (also called bone marrow failure disorder)

**myelogenous leukemia** leukemia involving immature red blood cells, granulocytes, monocytes, or platelets (also called myeloid leukemia or nonlymphocytic leukemia)

**myeloid** pertaining to, derived from, or resembling bone marrow

**myeloma** a tumor derived from B cells in the blood marrow

**myelomonocytic leukemia** leukemia involving monocytes and myeloblasts (immature granular leucocytes)

## N

**nanofiber** a fiber with a diameter of less than 100 nanometers (less than one tenth of a micrometer)

**nanoparticle** a particle with a diameter of less than 100 nanometers (less than one tenth of a micrometer)

**nanowire** an electrical wire with a diameter of less than 100 nanometers (less than one tenth of a micrometer) and typically with a length more than 1,000 times its diameter

**nasal cavity** the air-filled space above and behind the nose

**nasal turbinates** thin, scrolled bony plates that project from the walls of the nasal cavity (also called nasal conchae or nasoturbinates)

**nasopharyngeal** of or pertaining to the nasopharynx

**nasopharynx** the upper part of the pharynx, behind the nasal cavity and above the soft palate

**National Priorities List** a list of hazardous waste sites eligible for long-term remedial action financed under the U.S. EPA Superfund program

**natural killer cell** a type of white blood cell that has the ability to destroy tumor cells or virus-infected cells without relying on memory of exposure to a specific pathogen

**necrosis** the death of tissue due to disease, injury, or failure of blood supply

**negative control** in an experiment, a group that has not received the experimental treatment and from which no response is expected

**neonatal** pertaining to or affecting the first four weeks after birth

**neoplasia** the abnormal proliferation of cells (tumor formation)

**neoplasm** a new growth resulting from abnormal proliferation of cells; a tumor

**neoplastic** pertaining to neoplasia (tumor formation)

**nephroblastoma** a rapidly developing malignant tumor of the kidney (also known as Wilms tumor)

**nephrotic syndrome** a kidney disorder characterized by swelling, excessive proteins in the urine, and elevated susceptibility to infections

**nested case-control study** a case-control study conducted within a cohort study, in which cases of a disease that occur within the cohort are identified, and the case subjects are compared with members of the cohort who have not developed the disease, who serve as control subjects

**neural** of or pertaining to the nerves

**neuroblastoma** a malignant tumor of the nervous system consisting chiefly of immature cells

**neuroendocrine** pertaining to or involving both the nervous system and endocrine secretion

**neurogenic** originating in or forming nervous tissue

**neutron** an elementary particle of matter that is electrically neutral and is found in the nucleus of all atoms except hydrogen

**nodule** a swelling or protuberance

**nodular** resembling or consisting of nodules

**non-Hodgkin lymphoma** a heterogeneous group of malignant lymphomas

**nonhomologous recombination** during the process of DNA repair, joining of chromosome fragments that do not contain corresponding DNA

**nonpolar** pertaining to molecules that have a symmetric distribution of charge, with no positive or negative poles, and that do not ionize in solution

**nonoxynol 9** a spermicide widely used in contraceptive preparations

**nuclei** the plural of "nucleus"

**nucleic acids** large molecules, composed of nucleotides, that store and transmit genetic information; DNA and RNA

**nucleocapsid** the capsid of a virus with its enclosed nucleic acid

**nucleoside** a compound that consists of a purine or pyrimidine base linked to a sugar and found especially in DNA or RNA

**nucleotide triphosphatase** an enzyme required for viral replication

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**nucleotides** the molecular subunits of nucleic acids, consisting of a purine or pyrimidine base, a sugar, and phosphoric acid

**nucleus** a membrane-enclosed structure present in most eukaryotic cells, containing most of the cell's genetic material

### O

**oat-cell carcinoma** a type of lung cancer (also called small-cell carcinoma or small-cell bronchogenic carcinoma)

**octanol-water partition coefficient ( $K_{ow}$ )** the ratio of the solubility of a compound in octanol (a nonpolar solvent) to its solubility in water (a polar solvent)

**odds ratio** a ratio of the odds of an event in one group to the odds of the same event in another group; an odds ratio of 1 indicates that the event is equally likely in both groups

**odontoameloblastoma** a rare benign mixed tumor that is part ameloblastoma and part odontoma

**odontoma** a benign tumor of the tissue that gives rise to teeth

**offgassing** the release of gaseous chemicals from a solid material

**olefinic** denoting any of a class of unsaturated open-chain hydrocarbons having at least one double bond

**olfactory nerves** the nerves associated with the sense of smell

**oligodendrogloma** a tumor derived from glial cells that support and insulate nerve fibers in the central nervous system

**oncogene** a gene that contributes to the development of cancer; also used to refer to proto-oncogenes

**oncogenic** having the ability to cause cancer

**oncogenicity** the ability to cause cancer

**opioid** 1. (*noun*) any synthetic narcotic drug that binds to the same receptors in nerve cells as the naturally occurring alkaloids found in the opium poppy 2. (*adjective*) of or pertaining to the receptors for such substances

**oral administration** administration of a drug or test substance by mouth

**oral cancer slope factor** as defined by the U.S. Environmental Protection Agency, an estimate of the increased cancer risk from oral exposure to a dose of 1 mg/kg of body weight per day for a lifetime

**oral cavity** the space within the mouth

**oral reference dose** as defined by the U.S. Environmental Protection Agency, the amount of a chemical that one can ingest every day for a lifetime that is not anticipated to cause harmful non-cancer health effects

**organelle** a structure that is enclosed within its own membrane inside a eukaryotic cell and has a particular function

**organic** pertaining to the chemistry of carbon compounds

**oropharynx** the soft palate, tonsils, and back of the tongue and throat

**osteogenic sarcoma** a malignant bone tumor occurring most commonly in large bones and in areas of rapid bone growth

**osteoporosis** an abnormal loss of bone density

**ovary** one of the pair of female reproductive organs in which eggs are formed

**ovulation** the release of an egg from an ovary

**oxidant** an oxidizing agent

**oxidase** an enzyme that catalyzes oxidation reactions with molecular oxygen participating as the electron acceptor (also called oxidoreductase)

**oxidation state** a positive or negative number representing the number of electrons gained or lost by an element or ion in the reaction forming a particular chemical compound (also called oxidation number)

**oxidation-reduction reaction** a chemical reaction involving a transfer of electrons or hydrogen between two substances, whereby one substance is oxidized and the other is reduced (also called a redox reaction)

**oxidative stress** an imbalance between the production of reactive oxygen species and the ability of the body to detoxify them or counteract their effects

**oxidize** 1. (*transitive verb*) to remove one or more electrons from an atom, ion, or molecule 2. (*intransitive verb*) to become oxidized

**oxidizer** an oxidizing agent

**oxidizing agent** a chemical substance that accepts an electron from another substance in an oxidation-reduction reaction

**oxidoreductases** enzymes that catalyze oxidation-reduction reactions (also called oxidases)

### P

**palate** the partition separating the nasal and oral cavities

**pancreas** a large gland behind the stomach that secretes both hormones and enzymes involved in digestion and metabolism

**pancreatic** of or pertaining to the pancreas

**papillary** of or pertaining to a small, round, raised structure on a part or organ of the body

**papilloma** a benign tumor derived from epithelium that can arise from skin, mucous membranes, or glandular ducts and that projects from the surrounding surface

**paracrine** denoting a hormone secreted by a cell and diffusing a short distance to act on adjacent cells

**paraformaldehyde** a polymer of formaldehyde

**paranasal sinuses** four pairs of air-filled cavities surrounding the nasal cavity

**parathyroid gland** any of four small glands located beside the thyroid gland

**parenchyma** the functional cells of a gland or organ, as distinguished from its supporting tissue (the stroma)

**parenchymal** of or pertaining to the parenchyma

**parenteral** pertaining to administration of a substance by any route other than the alimentary canal

**pars distalis** the major portion of the anterior lobe of the pituitary gland

**particulate** pertaining to matter in the form of minute separate particles

**pathogen** any infectious agent

**pathogenesis** the process by which an agent causes disease

**pathogenic** having the ability to cause disease

**pathogenicity** the ability to cause disease

**pathologist** an expert in the study of disease

**pathology** the study of the nature of diseases

**pelvis** 1. the lower portion of the trunk of the body, between the hipbones 2. the renal pelvis

**pemphigus diseases** a group of chronic, relapsing autoimmune skin diseases that cause blisters or sores of the skin and mucous membranes

**perched aquifer** an aquifer that has a confining layer below the groundwater and sits above the main water table

**perinatal** pertaining to or occurring during the period closely surrounding the time of birth

**peripheral** away or farther from the center

**peripheral blood** blood circulating throughout the body

**peripheral nervous system** the part of the nervous system outside of the brain and spinal cord

**peritoneal cavity** the space within the abdomen that contains the intestines, stomach, and liver

**peritoneum** the lining surrounding the abdominal cavity and containing the internal organs in the trunk of the body

**permissible exposure limit** as defined by the Occupational Safety and Health Administration, the 8-hour time-weighted-average level of an air contaminant to which an employee may be exposed during any 8-hour shift of a 40-hour work week

**peroxidized fats** fats that have been damaged by oxygen free radicals, forming reactive aldehydes

**peroxisome** a cell organelle containing oxidative enzymes and performing essential metabolic functions

**pesticide** an agent intended to destroy a pest organism

**pH** a numeric scale of acidity and alkalinity, ranging from 0 to 14, where pH of less than 7 indicates acidity, pH of 7 indicates neutrality, and pH of more than 7 indicates alkalinity

**phagocytic** pertaining to phagocytosis or the cells responsible for phagocytosis

**phagocytize** (of a cell) to engulf and digest a solid substance

**phagocytosis** the process by which cells engulf and digest solid substances

**pharmacokinetic** pertaining to the fate of drugs within biological systems, including their absorption, distribution, metabolism, and elimination

**pharyngeal** of or pertaining to the pharynx

**pharynx** the passageway connecting the oral and nasal cavities to the larynx and esophagus

**phenolic** denoting a chemical compound consisting of a hydroxyl group (–OH) bonded directly to an aromatic hydrocarbon group

**phenotype** in genetics, a category or group to which an individual may be assigned on the basis of one or more observable characteristics that reflect genetic variation or interaction between the genes and the environment

**pheochromocytoma** a tumor derived from cells of the adrenal medulla

**phlebotomy** the practice of drawing blood from patients

**photodecomposition** photolysis

**photolysis** a chemical reaction in which a compound is broken down by light (also called photodecomposition or photodissociation)

**photosensitizer** a substance that causes an organism, cell, or tissue to become sensitive to light

**pituitary gland** an endocrine gland at the base of the brain that secretes several important hormones

**placenta** the organ in most mammals that connects the fetus with the mother's uterus

**plasma** (of blood) the fluid portion of blood, excluding the blood cells

**plasmablasts** immune cells that are immature precursors of antibody-producing B lymphocytes

**platelet** a component of blood derived from bone-marrow cells that has a major role in clotting

**pleomorphic** able to assume different forms

**pleura** the secretory membrane surrounding the lungs and lining the chest cavity

**pneumocystis pneumonia** an infection caused by the fungus *Pneumocystis jiroveci*, resulting in inflammation and fluid buildup in the lungs

**pneumonitis** inflammation of lung tissue

**polar** pertaining to molecules that have an asymmetric distribution of charge, with positive and negative poles, and that ionize in solution

**polycythemia vera** a disease characterized by abnormal proliferation of all bone-marrow elements involved in blood formation, resulting in increased blood cell mass and total blood volume

**polymer** a chemical formed by the joining together of similar chemical subunits

**polymerase chain reaction** a technique used to make multiple copies of a segment of DNA

**polymerization** the chemical reaction by which a polymer is formed

**polymorphism** in the population of a species, the existence of two or more alleles of a gene that are too common to be due only to new mutations

**polyp** a new growth protruding from a mucous membrane

**polypoid** resembling a polyp

**polyprotein** a large protein that is cleaved into separate smaller proteins with different biological functions

**positive control** in an experiment, an agent known to have the effect being tested for, used to verify that the experiment is functioning correctly

**postpartum** occurring after childbirth

**posttransplant lymphoproliferative disease** a complication of organ transplantation characterized by proliferation of B lymphocytes, resulting from immunosuppression used to prevent organ rejection

**preeclampsia** a potentially fatal complication of pregnancy related to insufficient blood supply to the placenta and characterized by high blood pressure

**prenatal** existing or occurring before birth

**preputial glands** sebaceous glands of the foreskin of the penis

**primary biliary cirrhosis** a disease in which the bile ducts of the liver are slowly destroyed, resulting in liver damage

**primary cancer** cancer occurring at the tissue site where it originally developed

**primate** any member of an order of mammals that includes humans, apes, and monkeys

**prokaryote** a single-celled microorganism that lacks a nucleus or any other membrane-bound organelles such as mitochondria; its genome consists of a single large molecule of DNA, and it does not undergo mitosis during replication; prokaryotes consist of bacteria and archaea

**prokaryotic** of or pertaining to prokaryotes

**promoter** 1. a substance that is not itself carcinogenic but that amplifies carcinogenic effects of other substances (a tumor promoter)  
2. a region of DNA that initiates gene transcription

**promyelocytic leukemia** leukemia involving predominantly granulocyte precursor cells

**prophylactic** (*adjective*) guarding from or preventing the spread of disease

**prospective study** a cohort study that follows over time a group of otherwise similar individuals who differ with respect to the factors under study, to determine how these factors affect the rates of a particular outcome

**prostate** a gland in males that surrounds the neck of the urinary bladder and the urethra and secretes a fluid component of semen

**protease** an enzyme that breaks proteins down into their component parts

**proteomics** the large-scale study of the functions, structures, and interactions of proteins, particularly the complete complement of proteins of a biological system

**proton** a stable positively charged particle that is a fundamental constituent of matter

**proto-oncogene** a normal gene that when altered by mutation becomes an oncogene

**protozoan** any of a large group of single-celled eukaryotic organisms that live in water or as parasites

**provirus** a form of a virus that is integrated into the genetic material of a host cell and can be replicated with and transmitted from one cell generation to the next without destroying the cell

**proximal tubule** the first part of a tubule that makes up a functional unit of the kidney

**psoriasis** a chronic hereditary skin disease characterized by thick red patches covered with silvery scales

**pulmonary** of or pertaining to the lungs

**purine** a type of nitrogen-containing base that is a component of DNA and RNA; adenine or guanine

**pyrimidine** a type of nitrogen-containing base that is a component of DNA and RNA; cytosine or thymine

**pyrolysis** decomposition of a substance by heat in the absence of air

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## R

**radical** (in chemistry) an atom or molecule that has at least one unpaired electron and is therefore unstable and highly reactive (also called a free radical)

**radioactive** emitting or pertaining to the emission of ionizing radiation or particles from an atomic nucleus

**radiotherapy** treatment of disease with ionizing radiation, especially to kill malignant cells

**reactive oxygen species** a chemically reactive molecule or free radical containing oxygen

**recommended exposure limit** an exposure limit that the National Institute for Occupational Safety and Health believes would be protective of worker safety and health over a working lifetime if used in combination with engineering and work practice controls, exposure and medical monitoring, posting and labeling of hazards, worker training, and personal protective equipment

**regional screening level** as defined by the U.S. Environmental Protection Agency, a concentration of an environmental contaminant, based on information on exposure and toxicity, used to determine the need for a response action

**renal** of or pertaining to the kidney

**renal pelvis** the funnel-shaped cavity in the central part of the kidney into which urine is discharged before passing into the urinary bladder

**reportable quantity** the quantity of a hazardous substance that triggers mandatory immediate reports to the National Response Center, state emergency response commissions, and local emergency planning committees if equaled or exceeded in releases to the environment

**respirable fibers** fibers that can reach the deepest part of the lungs, usually defined as particles with an aerodynamic diameter less than 3  $\mu\text{m}$ , length greater than 5  $\mu\text{m}$ , and aspect ratio of greater than 3:1

**respirable fraction** the fraction of inhaled particles or fibers that is respirable

**respiratory tract** the structures and organs involved in breathing, including the nose, pharynx, larynx, trachea, and lungs

**reticuloendothelial system** collectively, cells throughout the body that help filter out dead and toxic particles and identify foreign substances in the blood and tissues (also called the macrophage system or the mononuclear phagocyte system)

**reticulum-cell sarcoma** a malignant tumor derived from connective tissue

**retinoblastoma** a tumor of the retina (the light-sensitive layer of tissue at the back of the eyeball)

**retrospective study** an epidemiological study based on information collected from past records

**retroviral** of or pertaining to a retrovirus

**retrovirus** an RNA virus that can make a DNA copy of its genome and insert it into the host cell's DNA

**reverse transcriptase** an enzyme that catalyzes the formation of DNA from an RNA template

**rhabdomyofibrosarcoma** a malignant soft-tissue tumor that resembles fibrosarcoma but has characteristics of rhabdomyosarcoma

**rhabdomyosarcoma** a malignant tumor arising from skeletal muscle cells

**rheumatoid arthritis** a chronic disease of the joints, marked by inflammatory changes in joint structures

**rhinitis** inflammation of the mucous membrane of the nose

**rhombic** denoting a crystal having three axes of unequal length, each of which intersects at right angles with the others

**risk assessment** a systematic assessment of the likelihood that harm may occur from exposure to a hazard

**rodent** any mammal of the order Rodentia, which includes rats, mice, hamsters, gerbils, guinea pigs, hedgehogs, and other related species

**rodenticide** a substance used to kill rodents

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## S

**salivary glands** exocrine glands in the mouth that secrete saliva

**sarcoma** a type of tumor usually originating from connective tissue and usually malignant

**schwannoma** a tumor originating from Schwann cells (glial cells of the peripheral nervous system)

**scleroderma** hardening and thickening of the skin

**scrotum** the pouch that contains the testes and their accessory organs

**sebaceous** pertaining to a gland in the skin that secretes an oily substance into the hair follicles

**secretory** of, pertaining to, promoting, or produced by secretion

**seminal vesicles** tube-like glands located behind the urinary bladder that secrete a fluid component of semen

**sensitizer** a substance capable of inducing allergy following exposure, such that it causes an allergic response on subsequent exposure

**serological** pertaining to measurement of the levels of pathogens or antibodies in the blood

**seropositivity** the state of having blood serum that tests positive for the presence of a given pathogen or antibody

**seroprevalence** the rate of seropositivity in a population

**serum** (of blood) the component of blood that is neither a blood cell nor a clotting factor

**short-term exposure limit** as defined by the National Institute for Occupational Safety and Health, a 15-minute time-weighted-average exposure that should not be exceeded at any time during a workday

**sinonasal** of or pertaining to the nasal and sinus cavities

**sintering** forming a solid and compact mass of material by heating or pressure without melting

**sister chromatid exchange** the exchange of genetic material between two identical sister chromatids during mitosis; measured as an assay for DNA damage

**smooth muscle** muscle tissue not under voluntary control, found in the walls of hollow organs

**somatic cells** all cells in the body except for the sperm and egg cells

**somatic hypermutation** a mechanism in which B cells undergo complex rearrangement of their DNA to code for antibodies

**SOS chromotest** an assay for whether a substance damages DNA in the bacterium *E. coli*

**specific gravity** the ratio of the density of a substance to the density of a standard substance, usually water for liquids and air for gases

**spindle-cell sarcoma** any sarcoma composed of spindle-shaped cells

## Report on Carcinogens, Fourteenth Edition

**spleen** a large, vascular, lymphatic organ in the upper abdominal cavity that stores blood cells, removes worn out red blood cells and other debris, and initiates immune responses to antigens in the blood

**squamous cell** a flat, scale-like epithelial cell

**standardized incidence ratio** the ratio of the observed to the expected incidence of a specific health outcome, based on the incidence in the larger population from which the study sample was taken

**standardized mortality ratio** the ratio of the observed to the expected numbers of deaths due to a specific cause, based on the number of deaths from that cause in the larger population from which the study sample was taken

**statistically significant** in statistical hypothesis testing, likely not due to random chance

**stem cell** a simple, unspecialized cell that is able to develop (differentiate) into any kind of specialized cell

**stereoisomers** molecules containing the same numbers and kinds of atom groupings but in different spatial arrangements

**steroid hormone** any hormone secreted by the adrenal cortex, testes, ovaries, or placenta

**stroma** the supporting tissue of a gland or organ, as distinguished from its functional cells

**stromal** of or pertaining to the stroma

**subchronic** in rodent testing, refers to an exposure schedule lasting from one to three months (of a duration between acute and chronic)

**subcutaneous** beneath the skin

**summary odds ratio** a weighted combination of the odds ratios estimated from more than one study

**superalloy** an alloy capable of withstanding high temperatures, high stresses, and corrosive conditions

**synergistic** pertaining to the interaction of two agents to produce an effect greater than the sum of the agents' individual effects

**systemic** pertaining to or affecting the body as a whole

**systemic lupus erythematosus** a chronic autoimmune disease of the connective tissue that affects the skin, joints, kidneys, nervous system, and mucous membranes

## T

**T cell** a white blood cell that matures in the thymus and differentiates into one of several types of T cells with various functions in the immune system (also known as a T lymphocyte)

**technical grade** the lowest purity standard applied to a chemical; contains impurities

**teratogen** an agent that causes physical defects in developing embryos following exposure of the mother during pregnancy

**testosterone** a steroid hormone that plays a key role in the development of male reproductive tissues and male characteristics

**thoracic** pertaining to or located in the chest

**thorax** the chest

**threshold limit value** the concentration of a substance to which a worker can be exposed routinely for a lifetime without adverse health effects

**thymine** one of the two pyrimidine bases in DNA; pairs with adenine

**thymus** a lymphoid gland located in the upper chest that produces T cells in the young of most vertebrates

**thyroid gland** an endocrine gland located at the base of the neck that produces hormones involved in regulating metabolism

**time-weighted average** the average concentration of a chemical measured over a period of time

**topical** pertaining to application of a substance directly to a specific part of the body, affecting only that part of the body

**toxic** of or pertaining to a poison

**toxicity** the quality, relative degree, or specific degree of being poisonous

**toxicokinetics** the study of the change in concentration of a chemical and/or its metabolite in the blood or body tissues over time

**toxoplasmosis** a disease resulting from infection with the protozoan parasite *Toxoplasma gondii*, which rarely causes symptoms but may cause serious disease in infants or in adults with weakened immune systems

**trachea** the cartilage-ringed tube that connects the larynx and bronchi (also called the windpipe)

**tracheal** of or pertaining to the trachea

**tracheobronchial** of or pertaining to the trachea and bronchi

**trans-activation** activation of a gene by a diffusible regulatory factor

**transcript** (in genetics) a sequence of RNA produced from a DNA template

**transcription** the first step in gene expression, where the genetic code of a particular segment of DNA is transcribed into RNA, which serves as a template for protein synthesis

**transcription factor** a protein involved in the process of transcription of DNA into RNA

**transcriptomics** the study of the complete set of all RNA transcripts produced in one cell or in a population of cells

**transgenic** pertaining to an organism whose genome includes DNA derived from an unrelated organism; also used to describe the foreign DNA

**transition elements** elements that have electrons in their two outermost orbitals that can bond with other elements, and therefore share a number of chemical properties (also called transition metals)

**translocation** a chromosome abnormality caused by transfer or exchange of DNA segments between two chromosomes that contain different genes from each other

**transplacental** through the placenta

**transversion** a mutation in DNA that involves substitution of a purine for a pyrimidine or vice versa

**trichofolliculoma** a benign tumor originating from a hair follicle

**trichomoniasis** infection by protozoan parasites of the genus *Trichomonas*

**trigonal** denoting a crystal that has three equal axes separated by equal angles that are not right angles

**tubular adenocarcinoma** a malignant tumor arising from the lining of the tubules of the kidney

**tubular-cell adenoma** a benign tumor arising from the lining of the tubules of the kidney (also called renal adenoma)

**tumor** a growth of abnormal tissue resulting from excessive cell division (also called a neoplasm)

**tumorigenic** having the ability to cause tumors

**tumorigenicity** the ability to cause tumors

**tunica albuginea** a dense white fibrous sheath that encloses a body part or organ

**tunica vaginalis** the membrane that covers the testis and the duct leading out of the testis

## U

**ulcer** an open sore on an external or internal surface of the body

**ulcerative colitis** the chronic, recurrent occurrence of open sores in the colon

**upper respiratory tract** the nasal and oral cavities, pharynx, larynx, and trachea

**ureter** the tube that carries urine from the kidney to the urinary bladder

**urinary bladder** the sac in which urine is stored before being excreted

**urinary tract** the organs and ducts involved in producing and eliminating urine

**urothelial** of or pertaining to lining of the urinary tract, including the renal pelvis, ureters, urinary bladder, and urethra

**urticaria pigmentosa** the widespread accumulation of mast cells in the skin (mast cells are a type of white blood cell that play a role in inflammation and allergic reaction)

**uterus** in female mammals, the hollow muscular organ in which the embryo develops into a fetus

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## V

**vagina** the passage leading from the uterus to the outside of the female body

**vaginal** of or pertaining to the vagina

**valence** the combining power or affinity of an element, measured as the number of hydrogen atoms it combines with

**vapor density** the ratio of the weight of a given volume of one gas to the weight of an equal volume of another gas at the same temperature and pressure

**vapor pressure** the pressure exerted by a vapor in equilibrium with its solid or liquid phase

**vascular** of or pertaining to the blood vessels

**vehicle** in animal testing, the substance in which a test substance is dissolved or mixed for administration

**vehicle control group** in animal testing, a negative control group that receives only the vehicle, not the test substance

**vertebrate** any animal that has a spinal column; vertebrates include fish, reptiles, amphibians, birds, and mammals

**vesicle** a small sac containing liquid

**viral load** the concentration of virus particles in body fluids

**virion** the infectious form of a virus as it exists outside the host cell, consisting of a core of DNA or RNA surrounded by a protein coat

**viscosity** resistance to flow

**viscous** having a high resistance to flow

**vitamin** any of a group of substances that are found naturally in many foods, are necessary in small quantities for good health and normal development and functioning; designated by a capital letter and sometimes a number

**vitiligo** a chronic disorder in which white patches appear on the skin as a result of the loss of the cells that make pigment

**volatilize** 1. (*transitive verb*) to cause a substance to disperse in the form of vapor (evaporate) 2. (*intransitive verb*) to disperse in the form of vapor

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## W

**Waldenström macroglobulinemia** a chronic lymphoma originating in B cells

**Wegener granulomatosis** a progressive disease characterized by tumor-like lesions of the respiratory tract and inflammation of the bronchioles, progressing to inflammation of all organs of the body

**western blot immunoassay** a technique that uses antibodies to detect specific proteins in homogenates or extracts of tissue samples

**white pulp** the portion of the spleen consisting of lymphatic tissue, mainly white blood cells

**Wilms tumor** a rapidly developing malignant tumor of the kidneys, usually affecting children under age five

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## X

**xenobiotic** a chemical foreign to the organism or biological system in which it is found

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## Z

**Zymbal gland** any of several sebaceous glands surrounding the external ear canal in rodents