

## Appendix A: Glossary

### General Terms

Acute Exposure	Single exposure to an environmental condition (not lasting more than a day). Acute exposures contrast with chronic exposures, which are prolonged and repeated. Single exposures still have effects on health.
Allergic Reaction	An exaggerated or pathological reaction (sneezing, respiratory irritation, itching or skin rashes) to substances that are without comparable effect on the average individual.
Alveoli	Small thin-walled air-containing compartments of the lung that are typically arranged in saclike clusters that give the tissue a honeycomb appearance and expand its surface area for the purpose of air exchange.
Alzheimer's Disease	A type of dementia marked by the loss of cognitive ability, affecting memory, thinking and behavior generally over a period of 10 to 15 years.
Asthma	Chronic inflammatory disease of the airways. Asthma attacks are often triggered by exposure to allergens, and during an attack the airways spasm, alternatively swelling and narrowing, causing the individual to wheeze or gasp for air.
Building Envelope	The separation between the interior and the exterior environments of a building, restricting transfer of air, water, heat, light, noise and creatures.
Chronic Diseases	Any disease that is persistent or has long-lasting health effects.
Chronic Exposure	Repeated, continuous exposure to a substance or condition over an extended period from several years to a lifetime.
Circadian Rhythms	Internal clock that keeps the body's hormones and bodily processes on a roughly 24-hour cycle, even in continuous darkness.
Collaboration Zone	A physical area within a building that encourages group interplay and discussion through its strategic layout and design.
Cone Cells	Photosensitive cells in the eye used to differentiate colors and brightness in moderate and high levels of illumination.
Diabetes	A group of diseases that impact the metabolism due to insufficient insulin production (Type 1) and/or high insulin resistance (Type 2), and a leading cause of death. Results in poor blood sugar control, frequent urination, increased thirst, increased hunger and other symptoms.
Environmental Product Declaration (EPD)	Quantified environmental data for a product with pre-set categories of parameters based on the International Organization of Standards (ISO) 14040 series of standards, but not excluding additional environmental information.
Fenestration	An opening in a surface (as a wall or membrane).
Focus Zone	A physical area within a building that encourages concentration and attentiveness to a task among occupants through its strategic layout and design.
Free Address	Ability for occupants to be able to choose their own workspace within the office or workplace.
Fungi	Any of a group of unicellular, multicellular or syncytial spore-producing organisms feeding on organic materials.
Glazing	Glasswork, which must be carefully designed in order to avoid excessive glare and heat gain.
Health Product Declaration (HPD)	A standard format for reporting product content and associated health information for building products and materials.
Heart Disease	A class of disease that affects the heart, arteries, capillaries or veins.
Heating, Ventilating, and Air Conditioning System (HVAC)	Equipment, distribution systems and terminals that provide the processes of heating, ventilating or air conditioning.
High Efficiency Particulate Air (HEPA) Filter	Filter which removes 99.97% of all particles greater than 0.3 micrometers and satisfies standards of efficiency set by the Institute of Environmental Sciences and Technology.
High-touch Surfaces	Surfaces that are frequently touched by building users and occupants such as door knobs, hand rails and tables. See Table A1.
Homeostasis	A state of having regulated responses to environmental conditions to retain stability.
Immune System	The integrated body system of organs, tissues, cells and cell products such as antibodies that differentiates self from non-self and neutralizes potentially harmful organisms or substances.
Immuno-compromised	An inability to develop a normal immune response, usually as a result of disease, malnutrition or medical therapy that affects the immune system.

Inflammation	Localized protective reaction of tissue to irritation, injury or infection, characterized by pain, redness, swelling and sometimes loss of function.
Intrinsically Photoreceptive Retinal Ganglion Cells (ipRGCs)	Relay environmental light levels to the suprachiasmatic nucleus through the retinohypothalamic tract. Most sensitive to blue light.
Liver	An organ that plays a vital role in a range of important metabolic processes including detoxification, protein synthesis and glycogen storage.
Malnutrition	A condition that results from insufficient nutrient intake, excess nutrient intake or nutrient intake in the wrong proportions.
Metabolic	Any biochemical process that occurs within an organism that is necessary to sustain life.
Metabolic Syndrome	A cluster of medical conditions or risk factors that increase the chances of developing cardiovascular disease, diabetes fatty liver disease and several cancers.
Metamers	Different spectral distributions of light which produce the same response on the cones and are therefore visually identical.
Nanoparticles	Particles between 1 and 100 nanometers in size.
Nap Pod	A personal dedicated resting space optimized to offer a short but regenerative sleep.
National Ventilation Procedure	ANSI/ASHRAE Standards 62.1 is the recognized standard for ventilation system design and acceptable procedure with regards to establishing an effective ventilation system.
Neurocognitive Diseases	Diseases of the brain and nervous system.
Obesity	A medical condition in which the accumulation of excess adipose tissue poses an adverse effect on health.
Occupational Safety and Health Administration (OSHA)	Outlines current indoor air quality guidelines for the workplace.
Pathogen	An infectious biological agent such as bacteria, virus and fungus that is capable of causing disease in its host.
Photocatalytic oxidation (PCO)	Achieved when you combine UV light rays with a TiO <sub>2</sub> -coated filter.
Public Health Goals (PHGs)	Unenforced regulations developed by California Office of Environmental Health Hazard Assessment. Similar in concept to the EPA's Maximum Contaminant Level Goal (MCLG).
Radioactivity	The energy and particles which are released during the decomposition process of atomic nuclei is called radiation.
Regularly Occupied Space	An areas where workers or other building occupants perform focused activities inside a building for an average of one hour a day or more.
Respiratory Failure	Inadequate gas exchange by the respiratory system, with the result that oxygen and/or carbon dioxide levels leaving the heart cannot be maintained within their normal ranges.
Retina	Light-sensitive membrane found at the back end of the eyeball that receives the image produced by the lens.
Rod Cells	Photosensitive cells in the eye used to discern peripheral vision in low levels of illumination.
Sick Building Syndrome (SBS)	A set of symptoms, such as headache, fatigue, eye irritation and breathing difficulties, that typically affect workers in modern airtight office buildings, and that are believed to be caused by indoor pollutants and poor environmental control.
Sleep Hygiene	Personal habits and practices that help maximize sleep quality.
Tissues	A group of cells that perform a common and specified function. At an organizational level, tissues are between cells and organs.
Toxicity	Extent to which a substance is harmful to a living thing.
Trail	Any outdoor pathways designated for pedestrian or biker use.
Ultraviolet Germicidal Irradiation (UVGI)	A sterilization method that uses ultraviolet (UV) light to break down microorganisms by destroying their DNA. Often used in a variety of applications, such as food, air and water purification.
Universal Design (UD)	Designing objects and spaces with aesthetically pleasing while maximizing accessibility, usability and operability regardless of the user's age, ability and other factors.
Ventilation Rate	Rate of exchange of outside air, as well as the circulation of air within the building.
Wayfinding	Act of spatial problem solving.

<b>Weather Resistant Barrier (WRB)</b>	A sheet, spray- or trowel-applied membrane or material layer that prevents the passage of liquid water even after long or continuous exposure to moisture.
<b>Zeitgebers</b>	Physical stimuli which have an impact on the body's circadian rhythm. Examples include light, temperature and eating or drinking behaviors.
<b>Substances</b>	
<b>2,4-Dichlorophenoxyacetic Acid (2,4-D)</b>	A major herbicide that is very susceptible to running off or leaching into ground and surface water sources.
Acrylamides	A potentially toxic and potentially cancer-causing substance that can be naturally present in uncooked, raw foods in very small amounts.
<b>Aerosols</b>	Substances consisting of very fine particles of a liquid or solid suspended in a gas. For example, mist which consists of very fine droplets of water in air.
<b>Allergen</b>	Environmental substance that can produce an allergic reaction in the body but may not be intrinsically harmful. Common allergens include pollen, animal dander, house dust, feathers and various foods.
Antibody	Proteins generally found in the blood that detect and rid the body of potentially damaging organisms, such as bacteria and viruses.
Antimony	A naturally occurring metal found in ore deposits; the most common form of antimony is antimony trioxide, which is used as a flame retardant.
Arsenic	An element found in the earth's crust that has applications in various industrial processes, however runoff from factories, agricultural practices and natural deposits can lead to high concentrations in water.
<b>Asbestos</b>	A naturally occurring mineral that was commonly used in insulation because of its chemical and flame resistance, tensile strength and sound absorption properties. It is now known to be a leading cause of mesothelioma and lung cancer.
<b>Atrazine</b>	Among the most widely used pesticides in the United States and among the most commonly detected pesticide in drinking water.
<b>Benzene</b>	Widely used as a precursor to various materials such as detergents, dyes, pesticides, Styrofoam, nylon and other synthetic fibers.
Carbohydrate	Any of a group of organic compounds that includes sugars, starches, celluloses and gums and serves as a major energy source to support bodily functions and physical activity. Easily digestible carbohydrates found in white bread, pastries and soda may contribute to weight gain and promote diabetes and heart disease.
<b>Carbon Monoxide</b>	Colorless, odorless and highly poisonous gas formed by incomplete combustion. Replaces oxygen in hemoglobin, limiting blood's ability to deliver oxygen and can lead to death.
Carcinogens	A compound that increases the risk of developing cancer.
<b>Chloramine</b>	A disinfectant formed when ammonia is added to chlorine and is commonly used as a secondary disinfectant in public water systems.
<b>Chlorine</b>	A highly irritating, greenish-yellow gaseous halogen, capable of combining with nearly all other elements, produced principally by electrolysis of sodium chloride and used widely to purify water, as a disinfectant and bleaching agent.
<b>Coarse Particles</b>	Particulate matter larger than 2.5 micrometers and smaller than 10 micrometers in diameter; also called PM <sub>10</sub> . Often found near roadways and dusty industries.
Copper	Metallic element that enters water sources through natural deposits, but contamination most commonly occurs through corrosion of copper or brass.
<b>Cortisol</b>	A hormone that plays a primary role in stress, during which it increases blood sugar, suppresses the immune system and aids in protein, fat and carbohydrate metabolism. Also undergoes diurnal variation, playing an important role in the sleep-wake cycle.
Decorative Glazing	Coating on window surfaces purely for aesthetic purposes with no other functionality.
Ethylbenzene	A naturally occurring component of crude oil and a combustion byproduct.
<b>Fine Particles</b>	Particulate matter 2.5 micrometers in diameter or smaller. Can be directly emitted from combustion sources such as forest fires or can form when gases emitted from power plants, industries and automobiles react in the air. Also called PM <sub>2.5</sub> .
<b>Flame Retardants</b>	Chemicals used in thermoplastics, thermosets, textiles and coatings that inhibit or resist the spread of fire. Some of these chemicals have been linked to cancer, delayed development, low IQ and thyroid disruption.
Food Additives	Substances typically added to processed foods to enhance or preserve flavor or appearance.

Formaldehyde	A colorless gas compound, HCHO. Used for manufacturing melamine and phenolic resins, fertilizers, dyes and embalming fluids as preservatives and disinfectants.
Fructose	A simple sugar that is found naturally in small amounts in fruits and vegetables, but which occurs in extremely large quantities in many modern foods. High fructose intake has been implicated in liver disease, inflammation, metabolic syndrome, diabetes, heart disease and cancer.
Fungicides	Chemicals applied to crops or structures to reduce the harmful effects of mold, mushrooms and other fungi.
Glucose	A simple sugar that occurs widely in most plant and animal tissue. It is the principal circulating sugar in the blood and the major energy source of the body. Once eaten, carbohydrates break down immediately into glucose. Elevated blood glucose levels are one of the distinguishing elements of diabetes.
Glyphosate	A non-selective herbicide used in many pesticide formulations; exposure may result from its normal use due to spray drift, residues in food crops and from runoff into drinking water sources.
Haloacetic Acid	When chlorine and chloramine are added to water and react with other organic matter to produce haloacetic acids known as a disinfectant byproduct (DBP), these can damage internal organs and the nervous system in elevated concentrations and can lead to cancer.
Herbicides	A group of pesticides commonly used on farms and lawns to eliminate weeds from the fields.
Hormones	A chemical released by a cell, gland or organ that transmits a signal to another part of the body.
Hydrogenation	Made by forcing hydrogen gas into oil at high pressure in order to increase the shelf life and prevent rancidity of an oil.
Inorganic Chemicals	Refers to a chemical compound that is not "organic". Broadly, compounds not containing carbon.
Iron	Necessary for healthy blood circulation, but excessive iron particles in water can provide a shelter for disease-causing bacteria.
Lead	A naturally occurring metal found deep within the ground. Used in creation of old pipes, ceramics and paint. Also the stable final element of uranium's radioactive decay series.
Manganese	Small amounts are required for a healthy diet, but higher amounts may cause neurological damage.
Melatonin	"Darkness hormone" whose levels in the body is regulated by the circadian rhythm and the presence of light and in humans acts a driver for sleep.
Mercury	A naturally-occurring poisonous metal element which occurs naturally in the earth's surface.
Microflora	Bacteria and microscopic algae and fungi, especially those living in a particular site or habitat.
Nickel	Enters groundwater and surface water by dissolution of rocks and soils, from atmospheric fallout and biological decays and waste disposal.
Nitrogen Dioxide (NO <sub>2</sub> )	A product of combustion mainly found near burning sources (for instance, wood smoke and traffic combustion).
Nutrient	A chemical that is required for metabolic processes, which must be taken from food or another external source. Macronutrients taken from food sources include carbohydrates, proteins, fats and vitamins.
Organic Chemicals	Broadly refers to chemical compounds that possess carbon-based atoms, generally found in biological systems.
Oxidized Lipids	A lipid, any of a diverse group of organic compounds including fats, oils, hormones and certain components of membranes that are grouped together because they do not interact appreciably with water, combined chemically with oxygen.
Ozone	Triatomic form of oxygen. Hazardous to the respiratory system at ground level, but a layer in the upper atmosphere blocks much of the ultraviolet radiation from the sun.
Partially Hydrogenated Oil	Vegetable oils that have been hydrogenated or partially hydrogenated for the purpose of being solid at room-temperature, which contain trans-fats.
Particulate Matter	A complex mixture of elemental and organic carbon, salts, mineral and metal dust, ammonia and water that coagulate together into tiny solids and globules.
Perfluorinated Compound (PFC)	A family of fluorine-containing chemicals with unique properties to make materials stain- and stick-resistant.
Petrochemical	A chemical that is made from petroleum or natural gas.
Polychlorinated Biphenyls (PCBs)	A former commercially produced synthetic organic chemical compound that may be present in products and materials produced before the 1979 PCB ban.
Polyunsaturated Fat	Polyunsaturated fats are among the "good" fats that can help reduce cholesterol levels and risk of heart disease and stroke. Polyunsaturated fats are found in sunflower, corn, soybean and flaxseed oils, walnuts and many fish.

Polyurethane	A synthetic resin used chiefly in paints and varnishes. Diisocyanates in polyurethane products can be toxic if inhaled or touched during installation.
Polyvinyl Chloride (PVC)	An inexpensive plastic that is widely used for many objects. Exposure to its chemical precursors, additives and products of combustion can be harmful.
<b>Radon</b>	<b>Radioactive, carcinogenic noble gas generated from the decay of natural deposits of uranium.</b>
Saturated Fat	Typically solid at room temperature, saturated fats are found in high concentrations in salmon, butter, bacon, beef and cheese.
<b>Serotonin</b>	<b>Neurotransmitter hormone produced in the gut and brain stem which regulates mood, sleep and digestion.</b>
<b>Simazine</b>	<b>Widely used in agriculture as an herbicide to control weeds; high levels of simazine exposure over a short period can cause weight loss and blood damage.</b>
Sodium	Sodium is consumed as sodium chloride in common salt. It is a vital nutrient, but unhealthy in high amounts.
<b>Sulfate</b>	<b>Sulfates occur naturally and can erode into water supplies; the health effects of sulfates are uncertain, but ingesting large amounts has been linked to negative health effects</b>
Tetrachloroethylene	A chlorinated hydrocarbon used as a dry cleaning solvent, an additive in textile processing and metal degreasing that has been linked to cancer.
Toxicant	Any toxic substance, generally created by human activity.
Toxin	A poisonous substance produced by a living organism.
<b>Trihalomethane</b>	Chlorine in water can combine with organic matter to form compounds called disinfectant byproducts (DBPs), such as trihalomethanes.
Ultrafine Particles	Also called nanoparticles, ultrafine particles are a subcategory of P <sub>2.5</sub> which are exclusively less than 0.1 μm. Due to the small size they are often airborne and can easily reach the alveoli of the lungs.
<b>Urea-formaldehyde (UF)</b>	<b>A low-cost thermosetting resin that is used in the wood product industry.</b>
<b>Volatile Organic Compounds (VOCs)</b>	Organic, and therefore carbon and hydrogen containing, materials which evaporate and diffuse easily at ambient temperature. VOCs are emitted by a wide array of building materials, paints and common consumer products.
Xylene	Typical applications include solvents for the printing, rubber and leather industries as well as ingredients in paper and fabric coatings.

## Units and Measures

Air Changes Per Hour (ACH)	A measure of how many times the volume of air within a defined space is replaced, used in the context of building ventilation and air tightness.
<b>Annual Sunlight Exposure (aSE)</b>	Percentage of space in which the light level from direct sun <b>alone exceeds a pre-defined threshold</b> (such as 1000 lux) for some quantity of hours (such as 250) in a year.
A-Weighted Decibel (dBA)	Acoustic decibel modified using "A-weighting" to adjust the frequency-dependent response of human hearing.
<b>Candela (cd)</b>	<b>Measurement of luminous intensity and the SI base unit of light.</b>
Clothing Insulation (CLO)	<b>Clothing insulation is the resistance to heat transfer provided by clothing measured</b> in clo (1 clo = 0.155 m <sup>2</sup> K/W = 0.88°F ft <sup>2</sup> h/BTU).
Color Rendering Index (CRI)	<b>Comparison of the appearance of 8 to 14 colors under a light source in question, to a blackbody source of the same color temperature.</b> CRI or Ra refers to the average of the first 8 comparisons and R9 describes the lighting accuracy on red surfaces.
Correlated Color Temperature (CCT)	Spectral distribution of electromagnetic radiation of a blackbody at a given temperature. For example, the color temperature during the daytime is approximately 15,000 K, while during sunset is approximately 1,850 K.
Cubic feet per minute (CFM)	Measures the mass of gas that passes through a certain point.
Decibel (dB)	A unit of measurement for sound. The decibel is a logarithmic unit so an increase in 10 decibels equals an increase by a factor of 10.
<b>Dry Bulb Temperature (DBT)</b>	<b>Temperature of air measured by a thermometer freely exposed to the air but shielded from radiation and moisture. This temperature is usually thought of as air temperature and it is the true thermodynamic temperature. Dry bulb temperature does not take humidity into account.</b>
Equivalent Continuous Level (LAeq)	The time averaged sound pressure level on the A-weighted scale, converted to decibels.

Equivalent Melanopic Lux (EML)	A measure of light used to quantify how much a light source will stimulate melanopsin's light response.
Footcandle (fc)	Unit of illuminance, equivalent to one lumen per square foot.
Frequency (f)	The number of times an event repeats itself per a specified unit of time. Hertz (Hz) is a common unit for frequency and equals cycles per second i.e. 1 Hz = 1 cycle/second. Most commonly used with waves (sound and light) and is the number of times the wave repeats itself at its particular wavelength.
Illuminance (Lux)	Amount of light passing through a given area in space. Measured in lux or foot-candles.
Impact Insulation Class (IIC)	Extent to which a physical structure blocks out sound, typically used in describing flooring, a higher IIC reduces footfall noise, and other impact sounds.
Light Reflectance Value (LRV)	Rating from 0 (black) to 100 (white) describing the amount of visible and usable light that reflects from (or absorbs into) a painted surface.
Lumens	Measure of luminous flux, derived from the SI base unit candela, and therefore weighted to the eye's sensitivity to light; 1 W of light at 555 nm equates to 683 lumens.
Luminance (cd/m <sup>2</sup> )	Measurement of how bright a surface or light source will appear to the eye. Measured in candela/m <sup>2</sup> or foot-lamberts.
Luminous Flux	Total luminous output of a light source, measured in lumens. Weighted to the eye's visual sensitivity.
Luminous Intensity	Radiant power weighted to human vision, describing light emitted by a source in a particular direction. Measured by the candela.
Lux	Unit of illuminance, one lux being equivalent to one lumen per square meter.
Maximum Contaminant Level Goal (MCLG)	Concentration of a substance in drinking water believed to result in no adverse effects. Derived from on Population Adjusted Dose and estimated daily water consumption, fraction of exposure from water and body weight.
Maximum Contaminant Levels (MCL)	Enforceable water quality limits for a substance, based on the Maximum Contaminant Level Goal, but taking into account technology and cost limitations of treatment.
Mean Radiant Temperature (MRT)	The uniform surface temperature of an imaginary black enclosure in which an occupant would gain or lose the same amount of radiant heat as in the actual non-uniform space; MRT is a primary driver of human thermal comfort, roughly equal in influence to air temperature.
Metabolic Rate (MET)	Rate that chemical energy in the body is converted to heat and mechanical energy.
Micro-Ra	Roughness rating of a physical surface, averaged in micro-meters & micro-inches.
Milliwatt (mW)	Unit of measurement for electromagnetic radiation, equal to 1/1000 watt. Not weighted to biological responses such as vision.
Minimum Efficiency Reporting Value (MERV)	Value assigned to an air filter to describe the amount of different types of particles removed when operating at the least effective point in its life.
Nephelometric Turbidity Units (NTU)	Measure the turbidity of water.
Noise Criteria (NC)	Define the sound pressure limits of the octave band spectra ranging from 63-8000 Hz. The noise criteria equals the lowest curve which is not exceeded in the spectrum.
Noise Isolation Class (NIC)	Field test for determining the sound transmitting abilities of a wall. Higher NIC values indicate better sound insulation i.e. more effective sound cancellation between spaces. NIC specifications are defined in ASTM Standard E366.
Noise Reduction Coefficient (NRC)	Average value that determines the absorptive properties of materials.
Parts per Billion (PPB)	Measurement of the mass of a chemical or contaminate per unit volume of water.
Parts Per Million (PPM)	A unit of measurement to express very dilute concentrations of substances.
PicoCurie per Liter (pCi/L)	A non-SI unit of radioactivity.
Relative Humidity (RH)	Ratio of partial pressure of water vapor in the air to the saturation pressure of water vapor at the same temperature and pressure.
Reverberation Time (RT)	Time it takes for sound to decay. The most commonly used reverberation time is RT60, the time it takes for the sound level to decrease 60 decibels. Additional reverberation time measurements are RT20 and RT30, for decreases of 20 and 30 decibels, respectively.

Sound Pressure Level (SPL)	Sound pressure level (SPL), also known as acoustic pressure, is the pressure variation associated with sound waves. Usually measured in decibels, the acoustic pressure is a ratio between the measured value and a reference value; a common reference is threshold of hearing or the minimum sound level that the average person can hear.
Sound Transmission Class (STC)	A laboratory method for determining the sound transmission through a wall. Higher STC values indicate more effective noise isolation than lower ones. STC specifications are found in ASTM Standards E90-09 and E1425.
Spatial Daylight Autonomy (sDA)	Percentage of floor space where a minimum light level (for example 300 lux) can be met completely for some proportion (for example 50%) of regular operating hours by natural light.
Visible Transmittance (VT)	Amount of light in the visible portion of the spectrum that passes through a glazing material.
Walk Score®	A measurement that takes into account a building inhabitants' physical output; it is recommended a building obtains a Walk Score® of 70 or greater.
Wavelength (λ)	The distance between two points on a wave in which the wave repeats itself. Often used to describe light waves.
μg/m <sup>3</sup>	The concentration of an air pollutant (e.g. ozone) is given in micrograms (one-millionth of a gram) per cubic meter air or μg/m <sup>3</sup> .