

Appendix B

Glossary of Terms

**(Source: FEBRUARY 2002 Iowa Concentrated Animal Feeding Operations
Air Quality Study, Iowa State University and The University of Iowa Study
Group)**

ACGIH - American Conference of Governmental Industrial Hygienists

Acidic equivalent 1 - pollutants differ in their acidic effect per gram. A pollutant's effect on acidification is expressed in acidic equivalents

Acidification 1 - the process by which a soil becomes increasingly acidic. This can be caused by emissions of sulphur dioxide, nitrogen dioxide and ammonia.

Acid precipitation 1 - the mechanisms by which acidity reaches the earth's surface. These include gaseous and particle pollutants in dry, occult or wet deposition.

Acute toxicity - effects of a single dose or multiple doses measured during a twenty-four-hour period

Adverse effect 2a - change in morphology, physiology, growth, development or life span of an organism exposed to air pollution, which results in impairment of functional capacity or impairment of capacity to compensate for additional stress or increase in susceptibility to the harmful effects of other environmental influences

Aeration 3 - a process forcing intimate contact between air and a liquid by one or more of the following methods: spraying the liquid in the air; bubbling air through the liquid; agitating the liquid to promote absorption of oxygen through the air liquid interface

Aerobic bacteria 3 - bacteria that require free elemental oxygen for their growth. Oxygen in chemical combination will not support aerobic organisms

Aerobic decomposition 3 - reduction of the net energy level of organic matter by aerobic microorganisms

Aerosols 4 - an assembly of liquid or solid particles suspended in a gaseous medium

long enough to enable observation or measurement.

Agitation 3 - the turbulent mixing of liquids and slurries

ALARA principle 1 - the “As Low as Reasonably Achievable Principle” according to which rules and regulations are based on a balanced assessment of available technology, economic costs and environmental interests

Ambient 5 - surrounding, as in the surrounding environment. The medium surrounding or contacting an organism (e.g., a person), such as outdoor air, indoor air, water, or soil, through which chemicals or pollutants can be carried and can reach the organism

Anerobic bacteria 3 - bacteria not requiring the presence of free or dissolved oxygen. Facultative anaerobes can be active in the presence of dissolved oxygen, but do not require it.

Animal health 6 - a state of physical and psychological well-being and of productivity including reproduction

Animal unit - many emission quantities published are based on a per animal unit (AU) basis. Unless otherwise noted, one AU is equivalent to 500 kg body weight (1,100 lbs.)

Application regulations 1 - regulations governing when and how livestock manure, sewage sludge, compost, black soil and combinations of the above may be applied on land

Appraisal 7 - cognitive process of assessing the extent to which a threat, challenge, or loss exists and the availability of needed coping resources

Asphyxia 8 - impaired or absent exchange of oxygen and carbon dioxide on a ventilatory basis.

Asthma 9 - a lung disease with the following characteristics: 1) airway obstruction (or airway narrowing) that is reversible (but not completely so in some patients) either spontaneously or with treatment; 2) airway inflammation; and 3) airway hyper-responsiveness to a variety of stimuli.

Bacteria 1 - A group of universally distributed, rigid, essentially unicellular procaryotic microorganisms. Bacteria usually appear as spheroid, rod-like or curved entities, but occasionally appear as sheets, chains, or branched filaments.

Bioaerosol - includes the sub-class of viable particulates that has an associated biological component

Biogas 3 - gaseous product of anaerobic digestion that consists primarily of methane and carbon dioxide

Bioterrorism 10 - the overt or covert dispensing of disease pathogens by individuals, groups, or governments for the explicit purpose of causing death or disease in humans, animals, or plants. Biological terrorism agents include both living microorganisms (bacteria, protozoa, viruses, and fungi), and toxins (chemicals) produced by microorganisms, plants, or animals.

Blue baby syndrome 11 - see Methemoglobinemia

Bronchiolitis obliterans - a disease of the airways of the lung that is characterized by fibrosis (scarring) of the small airways (bronchioles). Known causes include some viral infections, rejection of a transplanted lung, and inhalation of some mineral dusts and irritant fumes.

CAFO - Concentrated Animal Feeding Operation; also known as Confined Animal Feeding Operation; generally, a facility where large numbers of farm animals are confined, fed, and raised, such as dairy and beef cattle feedlots, hog production facilities, and closed poultry houses. EPA has developed a specific regulatory definition of CAFO for the purpose of enforcing the Clean Water Act.²

Chronicity index 12 - ratio of the acute to chronic LD50 dosage

Chronic effects - effects produced by prolonged exposures of three months to a lifetime

Clean Water Act 11 - federal legislation administered by the U.S. EPA that serves as the primary means of protecting and regulating the surface water quality of the United

State. The goal of this legislation is to eliminate the discharge of contaminants into United States waters and to achieve a level of water quality capable of supporting propagation of fish and wildlife and water-based recreation

Cognitive 7 - relating to thinking processes and related brain functioning

Coliform-group bacteria 1 - a group of long-living bacteria predominantly inhabiting the intestines of warm blooded animals, but also found in soil. It includes all aerobic and facultative anaerobic, gram-negative, nonsporeforming bacilli that ferment lactose with production of gas. This group of "total" coliforms include *Escherichia coli* which is considered the typical form of fecal origin. The fecal coliforms are often used as an indicator of the potential presence of pathogenic organisms.

Concentrate feed 1 - animal feed containing mineral supplements

Concentration 7 - the strong trend of monopolization and vertical integration in agricultural production, processing, and marketing, as well as in the manufacturing of farm inputs

Contract feeding 7 - a method of livestock production in which companies provide farmers with young animals, feed, medications, etc. and the farmers provide the building, equipment, and labor, while receiving a set amount per pound or head and absorbing many of the risks of production

Control condition 7 - condition in which no treatment occurs, thus allowing comparison of the effects of the experimental treatment

Coping 7 - efforts to decrease, tolerate, or master the demands created by stressors; may be adaptive or maladaptive

Depression 7 - disorder related to brain chemistry and biologic factors that is characterized by sadness, despair, low self-esteem, low positive affect, sleep disorders, or change in appetite

Designated areas 1 - areas protected by law, in this case areas vulnerable to leaching

Disease 13 - any deviation from or interruption of the normal structure or function of the body that has a characteristic set of symptoms and signs for which there are objective findings (e.g., medical tests, x-rays) and which fits the definition of a specific disease as seen in the International Code of Diseases (ICD-9).

Disposal 11 - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into the environment (land, surface water, ground water, and air)

Diversified operations 7 - farms that produce a variety of grains and livestock in ways (e.g., crop rotation) that promote environmental sustainability

Dosage - toxicity expressed as amount of toxicant per unity of body weight

Emissions - the rate at which gases or particulates leave a surface or ventilated structure. An emission rate is calculated by multiplying the concentration of a gas (mass or volume basis) by the airflow rate (volume of air per unit time) associated with this concentration

Empowerment 7 - enhancement of sense of capability, on individual and social levels, as distinct from power over others

Epidemiology - study of the distribution and determinants of health-related states or events in particular populations; application of this study to the prevention and control of health problems

Escherichia coli, E. coli 3 - one of the species of coliform bacteria in the intestinal tract of warm-blooded animals. Its presence is considered indicative of fresh fecal contamination.

Eutrophication 1 - excessive concentrations of phosphate and nitrogen enter the environment and upset the balance of water and soil ecosystems and diminish the quality of drinking water

Externalization of costs 7 - political and economic processes by which publicly unacceptable (e.g., polluting) aspects of manufacturing or production are directly or

indirectly paid by the public, rather than by the manufacturer, such as through hiding or ignoring costs, passing costs along to consumers, or receiving public subsidies

Facultative bacteria 11 - bacteria that can grow in the presence, as well as the absence, of oxygen

Farm commodities 7 - the grain, livestock, fiber, and other materials produced by farmers

EV1 - forced expiratory volume in one second

FVC - forced vital capacity

Groundwater 14 - that portion of the water below the surface of the ground at a pressure equal to or greater than atmospheric

Hazard 15 - potential for radiation, a chemical or other pollutant to cause human illness or injury

Health 2b - health is a state of complete physical, social and mental, and social well-being and not merely the absence of disease or infirmity

Housing unit - any facility used to house livestock or poultry incorporating either a mechanical or natural ventilation system for providing fresh-air exchange

H₂S - hydrogen sulfide

Impermeable - not permitting fluids to pass through

Inhalable - the class of particulates or bioaerosols having a mean aerodynamic diameter at or below 100 μm

Input standard 1 - the maximum amount of minerals per acre that may be deposited on land. The standard encompasses both the manure produced on the farm and manure or fertilizer inputted at the farmgate.

Inputs 7 - materials needed for farm production, e.g., seed, fertilizer, pesticides

Industrialized agriculture 9 - large-scale, highly capitalized farm production that favors corporate production over family farm production

Irritant 16 - toxicant that exerts its deleterious effects by causing inflammation of mucous membranes with which they came into contact. Irritants principally act on the respiratory system and can cause death from asphyxiation due to lung edema. Other mucous membranes that may be affected by irritants are those of the eyes.

Lagoon 3 - an earthen facility for the biological treatment of wastewater. It can be aerobic, artificially aerated, anaerobic or facultative depending on the loading rate, design, and type of organisms present.

Land application 3 - application of manure, sewage sludge, municipal wastewater, and industrial wastes to land either for disposal or for utilization of the fertilizer nutrients, organic matter, and improvement of soil tilth.

Land application unit - the process of applying animal manure to the soil

Laughing gas 1 - NO₂, forms naturally during nitrification. It is a greenhouse gas.

Loss standard 1 - the amounts of phosphate and nitrogen that may be released into the environment. When losses exceed the loss standard, a levy is raised on the difference.

Low emission manure application techniques 1 - techniques where manure is not spread on the surface but is injected into the sod or ploughed in to prevent ammonia emission.

Low-emission housing 1 - livestock housing with a lower ammonia emission than conventional housing

Manure 3 - the fecal and urinary excretion of livestock and poultry. Often referred to as livestock waste. This material may also contain bedding, spilled feed, water or soil. It may also include wastes not associated with livestock excreta, such as milking center wastewater, contaminated milk, hair, feathers, or other debris. Manure may be described in different categories as

related to solids and moisture content. These categories are related to handling equipment and storage types.

Manure disposal contract 1 - contract between a livestock farmer with a manure surplus on his farm and an arable farmer or other user of agricultural land with a manure shortage, or a manure processing establishment

Manure storage unit - any structure used to store manure, including long-term storage inside the housing unit. Includes above- and below-ground structures.

Meteorological 17 - pertaining to the atmosphere and its phenomena, especially of its variations of heat and moisture, of its winds, etc.

Methemoglobinemia 11 - illness caused by high levels of nitrate in drinking water, above about 45 ppm, which infants are particularly susceptible to.

Methane 1 - a gas that is released during the digestive processes of ruminants. Methane is a greenhouse gas

Microorganism - a microscopic organism as a bacteria or fungi

Minerals accounting system 1 - registration of nitrogen and phosphate inputs and outputs on a farm. Input and output should be balanced although some loss is considered acceptable (loss standard).

Minimum risk level (MRL)¹⁸ - an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure.

Multiplier effect 7 - the multiplying of economic activities, including at the community level, including that achieved through raw material production

NH₃ - ammonia

Nitrification 3 - the biological oxidation of ammoniacal nitrogen to nitrite and then to nitrate

NO₂ - nitrogen dioxide

Nonpoint source pollution 19 - Nonpoint source pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. Nonpoint source pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water. In rural areas these pollutants include bacteria and nutrients from livestock, soil sediments, fertilizers, herbicides, and insecticides.

Nutrient pollution 11 - contamination by excessive inputs of nutrient: a primary cause of eutrophication of surface waters, in which excess nutrients, usually nitrogen or phosphorus, stimulate algal growth. Sources of nutrient pollution include runoff from fields and pastures, discharges from septic tanks and feedlots, and emissions from combustion.

Odor threshold 3 - the lowest concentration of an odor in air that can be detected by the human olfactory sense

Operating costs 7 - the costs of farm inputs, labor, credit, energy, etc.

OSHA - Occupational Safety and Health Administration

Particulate - includes the class of both inert and viable aerosols. Includes total, inhalable, and respirable fractions

Parity prices 7 - equality in prices for farm commodities in which farmers get a fair return in relation to their costs of production; historically maintained by government support of farm commodity prices at a level fixed by law and indexed for inflation

PEL - Permissible Exposure Limit

Point source pollution - pollution from a particular source

Poison - see Toxicant

Pollutant 11 - a contaminant that adversely alters the physical, chemical, or biological properties of the environment. The term includes toxic metals, carcinogens, pathogens, oxygen-demanding materials, heat, and all other harmful substances, contaminants, or impurities

Pollution 11 - presence of a contaminant to such a degree that the environment (land, water, or air) is not suitable for a particular use

Price support 7 - a policy mechanism such as the non-recourse loan that sets a floor under farm commodities and thus requires exporters or processors to pay a minimum price. This is in contrast to an “income support” that involves direct payments from the U. S. Treasury to support farm income but does not directly influence market prices.

Pulmonary 8 - relating to the lungs, to the pulmonary artery, or to the aperture leading from the right ventricle into the pulmonary artery

Regulation 11 - a requirement or rule passed by an agency or department of federal, state, or local government that is authorized to create and enforce a requirement or rule through an authorizing statute or constitutional authority

Resistance - the extent to which a disease or disease-causing organism is unaffected by antibiotics or other medications

Respirable - the class of particulates or bioaerosols having a mean aerodynamic diameter at or below 5 μm

Restructuring (agricultural restructuring) 20 - changes in the relationships among ownership, management, and labor in the agriculture-food system, with particular emphasis on the production component. Restructuring generally involves technological changes (including shifts in levels of specialization/diversification) as cause or effect, and may include changes in vertical and horizontal integration or coordination, in ownership of resources (including tenancy and leasing), in farm/firm size, in geographic location of specific agri-food activities, in composition of the work force, and in levels of concentration at various levels in the supply chain.

Risk assessment - the characterization of the potential adverse health effects of human exposures to environmental hazards

Runoff 21 - occurs when input of water exceeds infiltration. Pesticide runoff includes losses from the dissolved and sediment-absorbed pesticide. Though runoff generally results directly in the contamination of surface water, it can also contribute to ground water contamination through recharging ground water by the surface water.

Setback 18 - specific distance that a structure or area must be located away, from other defined areas or structures

Sinusitis 8 - inflammation of the lining membrane of any sinus, especially of one of the sinuses alongside the nose.

Siting 11 - choosing a location for a facility

Social capital - mutual trust, reciprocity, and shared norms and identity that are inherent in relationships between and among groups

Spot market - a market in which buyer and seller come together with no pre-arranged commitment or price with the expectation of exchanging a good or service. The terms of the transaction are public, and, jointly with other similar transactions of the day, define a market price for that day.

Statistically significant difference - a research finding that is unlikely (usually less likely than 5 percent) to be due to chance

STEL - short-term exposure limit

Stress 7 - emotional, physical, behavioral, and social reactions to stressors

Stressor 7 - short-term or ongoing conditions, situations, or relationships that cause stress, often involving change, conflict, or pressure

Subacute toxic effects - toxic effects apparent over a period of several days or weeks

Subchronic toxicity - toxic effects that occur between 30 days and 90 days exposure

Supply chain 22 - the chain of transactions and product transformations that take place between the producer and consumer of a particular commodity. Historically, in agriculture, supply chains have implied openness of entry for new producers, and hence involve mass production of an undifferentiated commodity.

Tolerance - condition in which repeated exposure increases the size of the dose required to produce lethality

Toxicity - the quantitative amount or dosage of a poison that will produce a define effect

Toxicant - any natural or synthetic solid, liquid or gas that when introduced into or applied to the body can interfere with homeostasis of the organism or life processes of cells of he organism by its own inherent qualities, without acting mechanically and irrespective of temperature

Trace element 1 - chemical elements (such as copper, zinc) present in minute quantities in plant or animal tissues and considered essential to these organisms' physiological processes. An overdose, however, is harmful for the organism. Non-essential trace elements such as cadmium are harmful even in very low concentrations.

TWA - Time Weighted Average

USDA - U. S. Department of Agriculture; federal agency that is responsible for select state and local programs regarding agricultural production, conservation, and food

Value-added agriculture 7 - production of farm commodities that are fully or partially processed before being marketed by farmers (as individuals or in groups, e.g., ethanol cooperatives), thus enhancing the income of farmers and rural communities

Value chain 22 - a supply chain characterized at least in part of its links by vertical coordination. Value chains generally involve limited entry at the various levels, or links in the chain, and are focused on providing particular consumer groups with a product that fits their preferences. The emphasis is on quality (or specific qualities), rather than on producing an inexpensive product.

Vertical coordination 23 - synchronization of the vertical stages of a production/marketing system

Vertical integration 24 - coordination of two or more stages in the food chain under ownership via management directive

VOC - volatile organic compound

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