

BACKGROUND MATERIAL SUPPORTING RECOMMENDATIONS FOR CHARACTERIZING SOME AGRICULTURAL TERMS THAT ARE IMPORTANT TO AGRICULTURAL AIR QUALITY

Introduction

Environmental laws have been passed by Congress and regulations have been promulgated by US EPA pursuant to those laws to control air, water, solid and hazardous waste, toxic substances and pesticides. Unfortunately, coordination is lacking among the regulations that address different media and often cross-media regulatory conflicts can be confusing, complicated, contradictory, and frustrating for regulated entities. Most regulations were developed with large entities/industrial facilities in mind to gain maximum environmental quality and smaller entities sometimes are caught in a regulatory scheme that did not adequately consider or were intended to apply to their processes, level of emissions, or type of emissions. Most large industrial entities have point source man-made emissions (stacks) that can be characterized, sampled, controlled, and monitored. Agricultural emissions tend to be relatively small, disperse, and many times natural and fugitive.

Agricultural field operations/production agriculture may cover thousands of acres that involve different crops, cultural practices, soil types, meteorological conditions, and processes and emission characteristics. Confined animal operations typically involve distinct structures/areas with multiple discharge points on one piece of property. For example, a confined animal operation may have numerous structures with thousands of discharge points on hundreds of acres under common ownership might be aggregated. To complicate the issue further, the operation might not even have to be contiguous to be aggregated.

Because of the unique, diverse character of agriculture, there is an urgent need to technically characterize, for agricultural environmental emissions research and regulatory purposes, agricultural operations and the methodology for determining discharge points (if any). Second, resolution of cross-media conflicts is necessary for agriculture to comply with regulatory requirements.

Agriculture should not be exempted from environmental regulations; agriculture should be regulated based on sound science and technical characterizations that best represent the process and emissions from the particular operation/entity.

Characterization of Agricultural Operations for Purposes of Determining Emissions to Air Under the Clean Air Act

The Clean Air Act (CAA) sets requirements for attainment of criteria pollutants [particulate matter (PM), ozone, NO_x, SO_x, CO and lead], which are regulated by National Ambient Air Quality Standards (NAAQS); for the regulation of 187 hazardous air pollutants (HAPs; Title III), which are regulated with National Emission Standards for HAP (NESHAPs); for federal operating permits (Title V; 40 CFR 70); control of accidental releases of toxic substances [Section 112(r); has a List of Regulated Toxic Substances (e.g., anhydrous ammonia, threshold quantity 10,000 lbs; ammonia concentration \geq 20%, TQ 20,000 lbs; hydrogen sulfide, TQ 20,000 lbs)]; as well as other things (e.g., acid rain and mobile source emissions).

The CAA defines the term "*stationary source*" under Title V, the federal operating permit program (40 CFR 70.2), as "any building, structure, facility, or installation that emits or may emit any regulated air pollutant or any pollutant listed under section 112(b) of the Act." For title V, a "*major source*" is any stationary source (or any group of stationary sources) located on one or more contiguous or adjacent properties and are under common control of the same person belonging to a single major industrial grouping that emits or has the potential to emit considering control, in the aggregate, 10 tons per year (tpy) or more of any hazardous air pollutant (HAP) or 25 tpy or more of any combination of HAPs or 100 tpy or more of any criteria pollutant (depending on the degree of attainment/nonattainment this number varies). The term "*potential to emit*" is defined as "the maximum capacity of a stationary source to emit a pollutant under its physical or operational design," considering controls and limitations that are federally enforceable. "*Area sources*" are defined as those facilities emitting HAPs or criteria pollutants that are not major sources by definition.

EPA has never defined an agricultural operation for purposes of the CAA and Title V. For agricultural air quality research it is necessary that agricultural operations have their own separate definition for applicability as stationary sources under the CAA.

Farms are defined by United States Department of Agriculture (USDA) and Small Business Administration (SBA) based on average annual gross receipts – not as a single facility at a fixed location.¹ The USDA Farm Service Agency (FSA) also designates farms by farm serial number(s) or equivalent unit(s) in each county. Farming operations may consist of one farm serial number or they may be made up with several numbers depending on operator and landlord considerations. Farming operations are not usually one fixed location but can be a collection of fields (each may have a separate USDA, FSA farm serial number or equivalent unit), whether contiguous or noncontiguous, under the control of the farmer and constituting a cohesive management unit, where the farmer provides active personal management of the operation.² Farming operations range in size from a few acres to tens of thousands of acres,

¹ The Bureau of the Census, in agreement with the USDA and Office of Management and Budget (OMB), defines a farm as any place that has \$1000 or more gross sales of farm products. SBA defines a farm as small business based on average annual receipts < \$750,000.

² This is from the definition of "agriculture operation" in the proposed USDA, Natural Resources Conservation Services' (NRCS) Conservation Security Program (CSP) rule.

The Agricultural Air Quality Task Force (AAQTF) advises the Secretary of Agriculture on issues relating to agricultural air quality. Consistent with the Federal Advisory Committee Act, the AAQTF is utilized solely for advisory functions. Determinations of action to be taken and policy to be expressed with respect to matters upon which the AAQTF reports or makes recommendations shall be made solely by the Secretary of Agriculture or an authorized officer of the Federal Government.

with 1-100 farm parcels (average 2 to 8.4 depending on the size category), which can be various distances apart (sometimes at least 5-15 miles). The 2002 Census of Agriculture lists 1,362,608 farms (783,597 < 200 acres; 297, 247 201-500 acres; 134,118 501-1000 acres; 147,646 over 1000 acres) that have harvested cropland (the figure of 2.1 million farms sometimes used includes farms that are hobby or non-commercial farms). The boundaries of a farming operation may depend on several site-specific factors, such as the ownership or operation of buildings, structures, and equipment on the same site and the types of activity at the site. Farms/farming operations usually are groups of stationary sources/fields that are not contiguous or adjacent.

Confined animal operations are usually at one fixed location with numerous discrete facilities having numerous discharge points. They may be located in the same proximity under the same ownership. Although animal operations tend to be more compartmentalized, application of “stationary source” is still problematic. In a prominent recent case, regulators/litigators have aggregated animal confinement structures into a source with one, uniform, continuous discharge in an attempt to designate the facility a major source. Engineers who have reviewed the case are concerned that this action did not use appropriate design standards and may result in a significant precedent. In another recent case, animal confinement structures were not aggregated.

Recommendations:

Because of the wide diversity of agricultural, there is a strong need to characterize agricultural emission sources and define how they should be treated in the context of the Clean Air Act. Specifically, the following should be addressed:

1. Contiguous and discrete sources need to be characterized and quantified based on their process stream and pollutant type.
2. Non-contiguous and/or non-adjacent properties (parcels of land) need to be defined based on the source of regulated air pollutants.
3. Separation distances for similar operations need to be determined based on health effects of the nearest receptor.

Multi-media Enforcement of Environmental Standards

The U.S. Environmental Protection Agency (EPA) administers all regulations affecting the environment and chemicals in commerce. EPA regulations are intended to protect human health and welfare and the environment. The individual states and state environmental regulatory control boards implement and enforce most of the regulations.

The legislation that serves as the basis for the regulation of emissions to air, water, and solid waste can be divided into:

1. Statutes that are media-specific [Clean Air Act (CAA) and Clean Water Act (CWA)];
2. Statutes that manage solid and hazardous waste [Resources Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); “Superfund”), and
3. Statutes that directly limit the production rather than the release of chemical substances [Toxic Substances Control Act (TSCA) and Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)].

Clean Air Act (CAA) - The primary federal law governing efforts to control air pollution. Federal legislation addressing air pollution was first adopted in 1955 (Air Pollution Control Act, P.L. 84-159) to provide research and technical assistance. The CAA has evolved from a set of principles designed to guide states in controlling sources of air pollution (1967 Air Quality Act) to a series of detailed control requirements that strengthened the federal role. [the Clean Air Act Amendments of 1970 (P.L. 91-604), 1977 (P.L. 95-95), and 1990 (P.L. 101-549)]. The Clean Air Act seeks to protect public health and the environment from emissions that pollute the air. States and state air control boards are required to implement regulations and develop state implementation plans (SIP).

Hazardous air pollutants (HAP) are regulated with National Emissions Standards for Hazardous Air Pollutants (NESHAP) and criteria pollutants [e.g., ozone (O₃), particulate matter (PM), nitrogen oxides (NO_x), sulfur oxides (SO_x), carbon monoxide (CO), and lead (Pb)] are regulated with National Ambient Air Quality Standards (NAAQS). NAAQS are to be reviewed and revised as appropriate every five years. (EPA has had difficulty meeting this schedule).

The Environmental Protection Agency is required to establish minimum National Standards Ambient Air Quality Standards (NAAQS), while states are assigned primary responsibility for developing compliance. Areas not meeting the standards (non-attainment areas) are required to implement specific control measures. There is no direct federal regulation of agriculture under the Clean Air Act. NAAQS for particulates and ozone affect agriculture. Ozone is formed in the atmosphere when oxides of nitrogen and volatile organic compounds (from manufacturing, transportation, and utilities) react in the presence of sunlight.

Section 112(r) of the CAA covers *Accidental Release* (an unanticipated emission of a regulated substance into the ambient air from a stationary source) *of Toxic Substances* (40 CFR 68). The purpose is to control releases of hazardous chemicals to the community and minimize the consequences of such releases. Substances regulated are listed in 40 CFR 130 and include: anhydrous ammonia, threshold quantity (TQ) 10,000 lbs; ammonia concentration $\geq 20\%$, TQ 20,000 lbs; hydrogen sulfide, TQ 20,000 lbs.

Clean Water Act - Refers collectively to the main federal law for protecting water quality [33 U.S.C. §§1251 to 1387]. This is the principal law governing pollution of the nation's rivers, lakes, estuaries, and coastal waters. Originally enacted in 1948 as the Federal Water Pollution Control Act (P.L. 80-845), it was totally revised by amendments in 1972 that gave the Act its current name and shape (P.L. 92-500). The objective of the Act is the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. The Act is implemented by the Environmental Protection Agency in partnership with state and local governments. Programs in the Act have been primarily directed at managing point source pollution (wastes discharged from industrial facilities, sewage treatment plants, and municipal storm sewer systems). Agricultural activities have been less of a focus, but some may be affected by the Clean Water Act. The act established the NPDES system for pollution permits and the non-point source provisions of §§208 and 319 which deal with agricultural runoff. Large confined animal feeding operations are treated like industrial sources and are subject to permit requirements. Programs to manage non-point source pollution (rainfall runoff from farms, rangelands, forests, etc.) may affect agriculture; however, irrigation return flows are specifically exempt from regulation. A program in the Act that regulates discharges of dredged and fill material into wetlands (Section 404) requires permits for activities on agricultural wetlands.

Resource Conservation and Recovery Act - P.L. 94-580 (October 21, 1976), as amended, authorizes the EPA to regulate solid and hazardous wastes. The Act defines solid and hazardous waste, authorizes EPA to set standards for facilities that generate or manage hazardous waste, and establishes a permit program for hazardous waste treatment, storage, and disposal facilities. RCRA made such comprehensive amendments to the Solid Waste Disposal Act (P.L. 89-272) that it became the name of reference.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Also known as Superfund [42 U.S.C. §§9601 to 9675], is the federal law which authorized EPA to require the cleanup of sites contaminated by past disposal of hazardous waste. **Emergency Planning and Community Right-to-know Act (EPCRA; 42-USC 11001 et seq.)**, is part of CERCLA/Superfund, Title III of SARA, the 1986 amended Superfund. EPCRA requires states to establish emergency planning districts with local committees to devise plans for preventing and responding to chemical spills and releases. These statutes have emission reporting requirements. Under CERCLA section 103 (42 USC §9603), the person in charge of a facility must notify the National Response Center in Washington D.C. (U.S. Coast Guard) of any release into the environment of a hazardous substance equal to or greater than the reportable quantity (e.g., ammonia is 100 pounds for a calendar day of 24 hours.) Under EPCRA section 304 (42 USC §11004(a)), a facility owner or operator must provide notice to state and local authorities of releases greater than the reportable quantity of substances deemed hazardous under CERCLA or extremely hazardous under EPCRA. The CERCLA definition of "hazardous substance" (42 USC §9601) triggers reporting under both CERCLA section 103 and EPCRA section 304. These emission reporting requirements, as a

result of lawsuits and regulatory actions, have been applied to air emissions from some agricultural operations whose air emissions are in compliance with the CAA.

Toxic Substances Control Act (TSCA) (15 USC 2600 et seq.) – If a chemical’s manufacture, processing, distribution, use, or disposal would create unreasonable risks, TSCA authorizes EPA to regulate it, ban it, or require additional testing.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) - 7 U.S.C. § 136 et. seq., as amended, authorizes the EPA to regulate all pesticides. Authority extends to setting tolerances, registering chemistries, approving labels, licensing applicators, and enforcement. Pesticide labels are construed to be enforceable regulations regarding pesticide use. Pesticide drift from applications is addressed on pesticide labels.

Recommendation:

The USDA Agricultural Air Quality Task Force recommends that USDA and EPA convene a working group composed of regulatory representatives from all regulatory media, affected agricultural operations, and interest groups to consider the scientific issues and resolve conflicts among the various environmental regulations affecting agriculture. Specifically, the working group should consider:

1. The definition of an agricultural operation related to contiguous property, non-adjacent property, ownership, discrete facilities for the purposes of aggregation under the CAA
2. The treatment of ammonia in context with the CAA, CERCLA, and EPCRA
3. The treatment of byproducts or constituents produced through natural biological processes in context with the CWA, CECLRA, EPCRA, and RCRA
4. Determination of which media specific statute/regulation shall have priority in a regulatory context.