

CLEANING THE AIR AT THE DAIRY: DAIRY PERMITTING IN THE SAN JOAQUIN VALLEY AND THE CONTROVERSY SURROUNDING THE SCIENCE

I. INTRODUCTION

The state of California faces losing \$2 billion annually in federal highway funds if it does not align its air quality with national standards.¹ On September 22, 2003, in the days just prior to the California gubernatorial recall, former Governor Gray Davis signed five environmental bills into law aimed at reducing the San Joaquin Valley's air pollution, now among the worst in the nation.² One such bill was Senate Bill 700 ("SB 700") which, in part, removed the permit exemptions for agricultural operations.³ The purpose of this Comment is to analyze the laws and regulations created and amended under SB 700, and specifically to explore whether the California Legislature has exceeded its authority under the federal Clean Air Act in adopting SB 700. SB 700 has had, and will continue to have, a dramatic effect on the dairy industry in the San Joaquin Valley ("Valley"), and, thus, this Comment will focus only on the laws and regulations applicable to dairy operations within the San Joaquin Valley.

This Comment begins with an overview of the sections of the federal Clean Air Act applicable to air quality standards imposed by California upon dairy operations. This Comment then discusses SB 700 and its operation through the Rules adopted and implemented by the San Joaquin Valley Unified Air Pollution Control District ("SJVAPCD"). A discussion will follow analyzing whether the acts of the California Legislature have exceeded the authority delegated to it under the federal Clean Air Act. Thereafter, this Comment will discuss the controversial emis-

¹ *Cleaning California's Air*, CA&ES IMPACT (U.C. Davis C. Agric. & Envtl. Sci., Davis, Cal.) June 2003.

² Miguel Bustillo, *The State: Davis Signs Measures to Ease Central Valley Air Pollution*, LOS ANGELES TIMES, September 23, 2003, at Part B, at 6.

³ *Id.*

sions factor adopted by the SJVAPCD, the pertinence of which will become clear throughout this Comment. This act of the SJVAPCD has had a tremendous impact on the operations of the dairy industry, in addition to creating widespread confusion among the dairymen of the San Joaquin Valley. In order to ease the impact, it is desirable that the SJVAPCD work closely with the dairy industry to develop a more acceptable emissions factor.

II. WHAT IS SB 700?

A. *Federal Clean Air Act*

1. State Responsibilities and Delegations under EPA

Under the federal Clean Air Act (“CAA”), the Environmental Protection Agency (“EPA”) delegates primary responsibility to each State for assuring air quality within the state’s geographic area.⁴ Each state is charged with developing and submitting an implementation plan for such state (state implementation plan, hereinafter referred to as “SIP”) that details the manner in which federal air quality standards will be achieved and maintained.⁵ Each state is divided into air quality control regions for purposes of developing and implementing SIPs.⁶ Every SIP shall include therein a requirement that the owner or operator of each major stationary source (defined below) pay to the permitting authority, as a condition of any permit, a fee sufficient to cover the reasonable costs of reviewing and acting upon any application for such a permit and the reasonable costs of implementing and enforcing the terms and conditions of any such permit.⁷

EPA regulations applicable to this Comment are directed at reducing and/or eliminating hazardous air pollutants through process changes, modifications, enclosing systems and other methods focused on the design of the polluting source.⁸ The hazardous air pollutants relevant hereto are those emitted into the air as volatile organic compounds (“VOCs”), which combine with nitrogen oxide, primarily emitted by cars and other internal-combustion engines,⁹ “in the air to form ozone, the

⁴ Clean Air Act §107(a), 42 U.S.C. § 7407 (2005).

⁵ *Id.*

⁶ *Id.*

⁷ Clean Air Act §110(a)(2)(L).

⁸ Clean Air Act §112(d)(2).

⁹ News Release, SJVAPCD, Air District Issues Science-based Dairy Pollution Estimate (August 1, 2005) (on file with author); Clean Air Act §112(b)(1); *Comments & Responses on the Air Pollution Control Officer’s Determination of VOC Emission Fac-*

primary ingredient of smog.”¹⁰ Dairies are considered the Valley’s largest source of VOCs¹¹ with livestock waste from dairy cattle alone (excluding livestock waste from broilers, range cattle and feedlot cattle) contributing 32.4% of all total organic gases, which include VOCs, according to the California Air Resources Board (“CARB”).¹²

California Health and Safety Code Section 42300 provides that:

(a) [e]very district board may establish, by regulation, a permit system that requires, except as otherwise provided in Section 42310, that before any person builds, erects, alters, replaces, operates, or uses any article, machine, equipment, or other contrivance which may cause the issuance of air contaminants, the person obtain a permit to do so from the air pollution control office of the district.¹³

B. SB 700: Overview

Senate Bill 700, authored by State Senator Dean Florez (D), was a series of additions and amendments to the California Health and Safety Code (hereinafter “H & S Code”).¹⁴ The bill reportedly targeted air pollution for the purpose of resolving the conflict between state and federal law, and because the poor air quality of the San Joaquin Valley and other regions of California is believed to contribute to the high rates of asthma and other respiratory illnesses.¹⁵ The State of California has divided its air quality control regions into thirty-five (35) districts.¹⁶ Each district is charged with the task of developing plans and implementing control measures required by SB 700 and the CAA within their district.¹⁷

First and foremost, SB 700 amended H & S Code Section 42310 by deleting subsection (e) that provided “[a] permit shall not be required for: (e) any equipment used in agricultural operations in the growing of crops

tors for Dairies, Draft Report (San Joaquin Valley Air Pollution Control District), June 27, 2005, at 28.

¹⁰ News Release, SJVAPCD, Dairy Committee Issues Emissions Report (May 6, 2005).

¹¹ *Id.*

¹² Fact Sheet #1, Planning and Technical Support Division, CARB, Modeling and Meteorology Branch and Emission Inventory Branch (August 2000); Top 25 Emissions Report, CARB, SJV Air Basin (2004).

¹³ Cal. Health & Safety Code § 42300 (Deering 2005).

¹⁴ S.B. 700, 2003, 2003-2004 Sess. (Cal. 2003).

¹⁵ California Air Pollution Control Officers Association (CAPCOA), White Paper on SB 700 (April 2004) available at http://www.capcoa.org/sb_700.htm.

¹⁶ California Air District Resource Directory, CARB (Sept. 26, 2005) available at <http://www.arb.ca.gov/capcoa/rster.htm>.

¹⁷ About the District: The Jurisdiction Puzzle, SJVAPCD available at http://www.valleyair.org/General_info/aboutdist.htm.

or the raising of fowl or animals....”¹⁸ The agricultural exemption previously afforded to operations within the State of California was a major point of conflict between state and federal law, whereby California faced sanctions and significant hurdles to obtaining air permits under federal law.¹⁹

Secondly, SB 700 adds Section 39011.5 to the H & S Code, which provides that:

(a) ‘Agricultural source of air pollution’ or ‘agricultural source’ means a source of air pollution or a group of sources used in the production of crops, or the raising of fowl or animals located on contiguous property...that meets any of the following criteria: (1) Is a confined animal facility, including, but not limited to, any structure, building, installation, barn, corral, coop, feed storage area, milking parlor, or system for the collection, storage, treatment, and distribution of liquid and solid manure, if domesticated animals, including, but not limited to, cattle, calves, horses, sheep, goats, swine, rabbits, chickens, turkeys, or ducks are corralled, penned, or otherwise caused to remain in restricted areas for commercial agricultural purposes and feeding is by means other than grazing.²⁰

Thus, a confined animal facility will include essentially any type of confinement for animals or fowl restricted to a certain area where the animals are fed by any means other than grazing, and will be considered an agricultural source subject to permit requirements.²¹ Section 39011.5 also designates as an “agricultural source” sources subject to Title V of the CAA, which applies to “major stationary sources” defined and discussed below.²²

Furthermore, and more importantly with respect to this Comment, Section 40724.6 was added to the H & S Code by SB 700 mandating that:

(a) [o]n or before July 1, 2005, the state board shall review all available scientific information, including, but not limited to, emissions factors for confined animal facilities, and the effect of those facilities on air quality in the basin and other relevant scientific information, and develop a definition for the source category of a ‘large confined animal facility’.... In developing that definition, the state board shall consider the emissions of air contaminants from those sources as they affect the attainment and maintenance of ambient air quality standards.

¹⁸ S.B. 700, 2003, 2003-2004 Sess. (Cal. 2003); Cal. Health & Safety Code § 42310 (Deering’s 2003).

¹⁹ California Air Pollution Control Officers Association (CAPCOA), White Paper on SB 700, April 2004 *available at* http://www.capcoa.org/sb_700.htm.

²⁰ S.B. 700, 2003, 2003-2004 Sess. (Cal. 2003).

²¹ California Air Pollution Control Officers Association (CAPCOA), White Paper on SB 700, April 2004 *available at* http://www.capcoa.org/sb_700.htm.

²² S.B. 700, 2003, 2003-2004 Sess. (Cal. 2003).

(b) Not later than July 1, 2006, each district that is designated as a federal nonattainment area for ozone as of January 1, 2004, shall adopt, implement, and submit for inclusion in the state implementation plan, a rule or regulation that requires the owner or operator of a large confined animal facility, as defined by the state board pursuant to subdivision (a), to obtain a permit for the district to reduce, to the extent feasible, emission of air contaminants from the facility.

...

(d) The rule or regulation adopted pursuant to subdivision (b) shall do all of the following: (1) [r]equire the owner or operator of each large confined animal facility to submit an application for a permit within six months from the date the rule or regulation is adopted by the district that includes...: (B) [a]n emissions mitigation plan that demonstrates that the facility will use reasonably available control technology in moderate and serious nonattainment areas, and best available retrofit control technology (BARCT) in severe and extreme nonattainment areas, to reduce emissions of pollutants that contribute to the nonattainment of any ambient air quality standard, and that are within the district's regulatory authority.²³

Additionally as relevant with respect herein, SB 700 added H & S Code Section 42301.16 which provides that the "permit system established by a district pursuant to Section 42300 shall ensure that any agricultural source that is required to obtain a permit pursuant to [the CAA] is required by district regulation to obtain a permit" consistent with the requirements of the CAA.²⁴ This section further mandates that:

(b) [e]xcept as provided in subdivision (c), a district shall require an agricultural source of air pollution to obtain a permit unless it makes all of the following findings in a public hearing: (1) [t]he source is subject to a permit requirement pursuant to Section 40724.6. (2) A permit is not necessary to impose or enforce reductions of commissions of air pollutants that the district show cause or contribute to the violation of state or federal ambient air quality standard. (3) The requirement for the source...to obtain a permit would impose a burden on those sources that is significantly more burdensome than permits required for other similar sources of air pollution.

(c) Prior to requiring a permit for an agricultural source of air pollution with actual emissions that are less than one-half of an applicable emissions threshold for a major source in the district, for any contaminant, but excluding fugitive dust, a district shall, in a public hearing, make all of the following findings: (1) The source is not subject to a permit requirement pursuant to Section 40724.6. (2) A permit is necessary to impose or enforce reductions of emission of air pollutants that the district show cause or contribute to a violation of a state or federal ambient air quality standard. (3) The requirement for a source...to obtain a permit would not impose a burden on those sources that

²³ *Id.*

²⁴ Cal. Health & Safety Code § 42301.16 (Deering 2005).

is significantly more burdensome than permits required for other similar sources of air pollution.²⁵

C. Practical Application

SB 700 not only brought California law in line with federal regulations under the CAA, but it took a drastic step beyond federal regulation requirements with the adoption of Section 39011.5, defining an “agricultural source” to include confined animal feeding operations and mandating that the districts in nonattainment status develop a definition for large confined animal facilities. Never before were animals’ emissions of air contaminants regulated, nor were they ever anticipated to be subject to air regulations. The practical matter is that regulating what cows emit into the air is a far stretch from regulating the emissions of cars, trucks, factories and other traditional, man-made sources of regulation under the CAA.

III. DISCUSSION AS TO WHETHER SB 700 EXCEEDS AUTHORITY GRANTED UNDER FEDERAL CAA

A. Definitions of Terms

A “stationary source” is defined under the CAA as “generally any source of an air pollutant except those emissions resulting directly from an internal combustion engine for transportation purposes or from a non-road engine or nonroad vehicle.”²⁶ “Stationary source” also “means any building, structure, facility, or installation which emits or may emit any air pollutant.”²⁷ For Title V Permitting Requirements, “the term ‘major source’ means any stationary source (or group of stationary sources located within a contiguous area and under common control) that is either...:”²⁸ (a) a “major source” that “emits or has the potential to emit considering controls, in the aggregate, ten (10) tons per year or more of any hazardous air pollutant or twenty-five (25) tons per year or more of any combination of hazardous air pollutants,”²⁹ or (b) a “major stationary source” defined as “any stationary facility or source of air pollutants which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant.”³⁰

²⁵ *Id.*

²⁶ Clean Air Act § 302(z).

²⁷ Clean Air Act § 111(a)(3).

²⁸ Clean Air Act § 501(2).

²⁹ CAA § 112(a)(1).

³⁰ CAA § 302(j).

According to the *Plain English Guide to the Clean Air Act*, a source can be a power plant, factory, motor vehicles, like cars and trucks, or anything that releases pollutants into the air.³¹ The glossary defines a “source” as “any place or object from which pollutants are released,” including a farm.³² However, the Plain English Guide identifies VOCs as being found in gasoline and consumer products such as hair spray, charcoal starter fluid and plastic popcorn packaging.³³ Considering the definitions of sources under the CAA and the examples of potential sources under the Plain English Guide, it does not appear that the CAA was intended to regulate cows, or even animals in general for that matter, as a source of air pollution.

So, how did California go from agricultural exemptions and traditional sources like factories and motor vehicles to confined animal facilities?

California acquired its authority to exceed the definitions and meanings of “source” under the CAA from the CAA’s Section 116.³⁴ Section 116 provides, in pertinent part, that:

[N]othing in [the CAA] shall preclude or deny the right of any State or political subdivision thereof to adopt or enforce (1) any standard or limitation respecting emissions of air pollutants or (2) any requirement respecting control or abatement of air pollution; except that if an emission standard or limitation is in effect under an applicable implementation plan or under section 111 or 112, such State or political subdivision may not adopt or enforce any emission standard or limitation which is less stringent than the standard or limitation under such plan or section.³⁵

Thus, the CAA set a minimum standard for sources of regulation, but failed to place a restriction on the States to impose higher standards for air quality.

Under the CAA, each and every state must conform to the regulatory requirements set forth therein. However, each state is left free to adopt more restrictive standards respecting control or abatement of air pollution. Therefore, California did not exceed the authority granted to it under the CAA in passing SB 700.

³¹ Plain English Guide to the Clean Air Act, EPA, Organization of Air Quality Planning & Standards (April 1993), EPA-400-K-93-001, available at http://www.epa.gov/oar/oaqps/peg_caa/pegcaa02.html.

³² *Id.* at Glossary, available at http://www.epa.gov/oar/oaqps/peg_caa/pegcaa10.html.

³³ *Id.*, available at http://www.epa.gov/oar/oaqps/peg_caa/pegcaa03.html.

³⁴ Clean Air Act § 116.

³⁵ *Id.*

B. District Rules Implementing EPA Sections and Applicable CA Code Sections

1. Rules the SJVAPCD Adopted to Conform to SB 700

A “nonattainment” region is one that does not meet the national ambient air quality standard for the pollutant.³⁶ Currently, the San Joaquin Valley Air Basin is designated as a nonattainment area for 8-hour Ozone.³⁷ As a result of the nonattainment designation, any source located in this area that qualifies as a major source is subject to the CAA permit requirements and the mandates of SB 700.

The San Joaquin Valley Air Pollution Control District is defined as including the Counties of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare, and the San Joaquin Valley Air Basin portion of Kern County.³⁸ This District regulates operations that qualify as “any physical action resulting in a change in the location, form, or physical properties of a material, or any chemical action resulting in a change in the chemical composition or physical properties of a material.”³⁹ The adoption of SB 700 brought within the District’s regulatory authority the 1,450 dairies currently in operation within the District’s boundaries.⁴⁰ Further, SB 700 led to the District’s adoption of rules which require that any planned construction of a new dairy operation, planned modification of an existing operation, and existing operations obtain a permit before such source may operate.⁴¹

District Rule 2201, as amended April 20, 2005, applies to “all new stationary sources and all modifications to existing stationary sources.”⁴² Rule 2201 mandates that Best Available Control Technology (“BACT”) is required for:

(4.1.1) [a]ny new emissions unit or relocation from one Stationary Source to another of an existing emissions unit with a Potential to Emit exceeding 2.0 pounds in any one day; (4.1.2) [m]odifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions exceeding 2.0 pounds in any one day; (4.1.3.) [a]ny new or modi-

³⁶ Clean Air Act § 107(d)(1)(A)(i).

³⁷ California 8-hour Ozone Nonattainment Area, EPA, Green Book – Nonattainment Area Map (October 14, 2005).

³⁸ Definitions, SJVUAPCD Rule 1020.3.14 (2005).

³⁹ *Id.* at Rule 1020.3.30 (2005).

⁴⁰ Central Valley Counties, Dairy CARES, available at http://dairycares.com/cv_counties.htm.

⁴¹ Permits Required, SJVUAPCD Rule 2010 (2005).

⁴² New and Modified Stationary Source Review, SJVUAPCD Rule 2201.2.0 (2005).

fied emissions unit, in a stationary source project, which results in a Major Modification, as defined in this rule.⁴³

BACT is defined as “the most stringent emissions limitation or control technique” achieved in industry practice, contained in any state SIP approved by the EPA, or those provided for in federal and District standards.⁴⁴

Whether a source of operation is subject to the BACT requirements is dependent upon that source’s potential to emit a regulated pollutant.⁴⁵ A major source for VOCs is a source that meets or exceeds the threshold of 50,000 pounds per year (however, SJVAPCD is awaiting EPA final approval of decreasing the threshold to 20,000 pounds per year).⁴⁶ Historically, the VOC emission factor was 12.8 lb/head-yr (pounds per head of cattle per year) based on estimates of total organic compounds from environmental chamber tests performed in the 1930s.⁴⁷ It appears that, at 12.8 lb/head-yr, a dairy with approximately 3,900 cows would meet the major source threshold requiring not only operating permits, but also triggering best available control measures (BACM) and (BARCT) requirements. Under the SJVAPCD’s proposed threshold reduction to 20,000 lb/yr, a dairy with approximately 1,560 heads of cattle would qualify as a major source. General permitting requirements under SB 700 already require that agricultural operations emitting over 25,000 lb/yr of VOCs obtain permits, subjecting dairies with approximately 1,950 cows to permitting requirements.⁴⁸

C. *Western United Dairymen et al. v. SJVAPCD, et al.*

The District’s implementation of SB 700 was challenged by Western United Dairymen and Alliance of Western Milk Producers, Inc. (collectively “Plaintiffs”) in an action against the SJVAPCD and its executive director, David Crow (collectively “the District”), filed in Fresno County Superior Court. This case, however, eventually settled.⁴⁹ Plaintiffs alleged that the District exceeded its lawful authority in issuing the dairy permitting requirements after passage of SB 700, and that “any permit-

⁴³ *Id.* at 2201.4.0.

⁴⁴ *Id.* at 2201.3.9.

⁴⁵ *Id.* at 2201.4.0.

⁴⁶ *Id.* at 2201.3.23.

⁴⁷ David L. Crow, SJVAPCD, Air Pollution Control Officer’s Determination of VOC Emissions Factors for Dairies (August 1, 2005) at 6.

⁴⁸ *Id.* at 1.

⁴⁹ *Western United Dairymen and Alliance of Western Milk Producers, Inc. v. San Joaquin Valley Unified Air Pollution Control District and David Crow*, No. 04CECG01596 (Fresno Co. Sup. Ct. Cal. filed May 27, 2004), *settled*.

ting of dairy operations should be limited to the permitting authorized under H & S Code Section 40724.6.”⁵⁰ Further, Plaintiffs asserted that, “even if the District [had] the lawful authority to impose” permitting requirements upon dairy operations, the District is prohibited from imposing such requirements on dairy operations that emit less than 12.5 tons/year (25,000 lbs.) of VOCs under existing major source thresholds unless the District “conducts certain hearings and makes certain findings in accordance with [H & S Code Section 42301.16(c)].”⁵¹

In the Settlement Agreement entered into between Plaintiffs and the District, whereby Plaintiffs agreed to dismiss the action among other conditions, the District conceded to violating Section 42301.16(c) by not having conducted the hearings and making the findings required under Section 42301.16(c) as a prerequisite to imposing dairy permitting requirements upon dairy operations which fall under the 12.5 tons/yr threshold.⁵² However, Plaintiffs agreed to dismiss the action, without prejudice, subject to six conditions. First, the District, through its Air Pollution Control Officer (“APCO”), would establish a Dairy Permitting Advisory Group (“DPAG”) comprised of representatives from the District, Plaintiffs, and others with expertise and interest in dairies and air quality issues.⁵³ The DPAG was to “work together in a collaborative manner as a clearinghouse for scientific and technical information pertaining to the permitting and regulation of dairies...providing recommendations and advice to the [District] for use in permitting and regulating dairy operations within the District.”⁵⁴

Second, the DPAG would meet regularly to attain completion of matters covered under the Settlement Agreement no later than December 31, 2005, and “allow all interested parties to provide meaningful input into the manner in which the District implements its dairy permitting program.”⁵⁵ The prominent issues to be addressed by the DPAG were “the development of a new dairy emissions factor [“emissions factor”], BACT requirements, and technical guidance as to when modifications at an existing dairy should trigger new source review.”⁵⁶

Third, the DPAG would “work to provide the APCO with recommendations and advice for a more accurate” emissions factor than the current

⁵⁰ Settlement Agreement at 1-2, *Western United Dairymen, et al. v. SJVUAPCD, et al.* (Fresno Co. Sup. Ct. Cal. 2004) (No. 04CECG01596).

⁵¹ *Id.* at 1.

⁵² *Id.*

⁵³ *Id.* at 3.

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

factor of 12.8 lb/hd-yr by evaluating the information developed in the scientific studies that were already underway at the time of this Agreement.⁵⁷ Such studies were conducted at UC Davis and CSU Fresno and were to be used by the DPAG “to develop a means for determining the volume of VOC emissions from individual” dairy facilities as a whole, and, “to the extent possible, for individual units that may be part of individual dairy operations, such as manure lagoons.”⁵⁸ The DPAG was scheduled to issue a “written report recommending a dairy emission factor no later than April 15, 2005, such report [to] include a discussion of the scientific information considered and evaluated by the DPAG.”⁵⁹ After submittal of this report, the APCO was to consider the information and recommendations contained in DPAG’s report, and subsequently adopt a dairy emissions factor.⁶⁰ Such action on the part of the APCO was scheduled to occur no later than July 1, 2005.⁶¹ The APCO expressly reserved the “right to adopt a dairy emissions factor other than that recommended by the DPAG” should the APCO determine “that the best available science shows that the [dairy emissions factor] is more accurate than” that recommended by the DPAG.⁶² Thereafter, the APCO was required to promptly issue a report explaining the APCO’s findings supporting their adoption.⁶³ The dairy emissions factor adopted was to be, and is currently, “used in implementing the District’s dairy permitting program including the permitting threshold and BACT determinations.”⁶⁴

Fourth, “Plaintiffs expressly reserve[d] their right to challenge” the new dairy emissions factor adopted by the District.⁶⁵

Fifth, the District would not formally develop “any proactive BACT guidance document until” a new dairy emissions factor is in place.⁶⁶

Sixth, all sources subject to permitting requirements that commenced construction, including binding agreements or contractual obligations to undertake a program of actual construction, would be considered grandfathered and not subject to new source review.⁶⁷

⁵⁷ *Id.* at 4.

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.* at 5.

⁶⁷ *Id.* at 7.

1. Dairy Permitting Advisory Group Recommendation to APCO

In accordance with the terms of the Settlement Agreement set forth above, the DPAG was assembled and, after a series of meetings and research, issued its recommendation regarding VOC emissions from dairy operations to the District.⁶⁸ DPAG members consisted of individuals from the dairy industry, Natural Resources Defense Council, University of California, and others.⁶⁹ Tasked with advising the District on a method for estimating emissions of VOCs from dairies,⁷⁰ DPAG was able to narrow the research into two basic approaches.⁷¹ The measurements were conducted at three different sites in the San Joaquin Valley: an operating dairy in Kings County, an operating dairy in Merced County, and a purpose-built chamber at UC Davis.⁷² The two dairies used “were considered typical of current Valley dairies.”⁷³

In the first approach, labeled by DPAG “process-based,” an emission factor was developed principally out of the work conducted by two research teams, one headed “by Dr. Frank Mitloehner of the University of California, Davis, and the other led by Dr. Chuck Schmidt, an independent researcher.”⁷⁴ Dr. Mitloehner’s research was conducted by “measuring emissions directly from cows, their fresh waste and feed” enclosed in environmental chambers.⁷⁵ Dr. Schmidt’s work was primarily based on measurements of emissions from surfaces at certain parts of dairies out of flux chambers.⁷⁶ A flux chamber, according to Dr. Schmidt, “is a device used for measuring the [fluctuation] of gas species from an area source.”⁷⁷

In the second “whole-dairy” approach, a research team headed by Dr. Charles Krauter of California State University, Fresno, constructed an

⁶⁸ DAIRY PERMITTING ADVISORY GROUP, SJVAPCD, DAIRY EMISSIONS FACTORS FOR VOLATILE ORGANIC COMPOUNDS: RECOMMENDATION TO THE SJVAPCO REGARDING VOC EMISSIONS FROM DAIRIES. FINAL REPORT (May 6, 2005).

⁶⁹ *Id.*

⁷⁰ *Id.* at 1.

⁷¹ *Id.* at 3.

⁷² *Id.* at 2.

⁷³ *Id.*

⁷⁴ *Id.* at 3.

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ CE Schmidt, Tom Card & Patrick Gaffney, *Assessment of Reactive Organic Gases and Amines from a Northern California Dairy Using the USEPA Surface Emission Isolation Flux Chamber*, available at <http://www.valleyair.org/workshops/postings/03-23-05/livestocksymposiumces.pdf>.

emissions factor by testing air samples taken upwind and downwind of dairies in Kings and Merced Counties.⁷⁸

Although DPAG acknowledged that the two approaches had the tendency of generating similar emissions estimates,⁷⁹ there was no consensus reached on each element measured and reported, and the result was three significantly different emissions factors from both approaches.⁸⁰ Where the submitted research for each approach disagreed as to the emissions factor for a respective element, an alternative method for calculating an emissions factor was reported for each element, with an explanation for each method, and, therefore, three different viewpoints were reported per element.⁸¹ The DPAG summarily reported process-based-approach emissions factors of 5.6, 13.3, and 38.2 lb/hd-yr from each viewpoint respectively.⁸² For the whole-dairy approach, the DPAG summarily reported emissions factors of 6.3, 15.4, and 39.7 lb/hd-yr from each viewpoint respectively.⁸³

It appears that, based on the membership of DPAG⁸⁴ and the presentations of DPAG Viewpoint 1⁸⁵ and DPAG Viewpoint 2,⁸⁶ the three viewpoints each, respectively, represent the three competing political forces interested in a new emissions factor. It can only be inferred therefrom that the proponents of Viewpoint 1 are the DPAG members representing the dairy industry; that the proponents of Viewpoint 2 are the DPAG members representing the District; and that the proponents of Viewpoint 3 are the DPAG members representing the environmental activists. "All DPAG members have agreed that averaging TOTALS is NOT appropriate."⁸⁷ Thus, the DPAG presented their recommendations in the form of three perspectives.

⁷⁸ DAIRY PERMITTING ADVISORY GROUP, SJVAPCD, DAIRY EMISSIONS FACTORS FOR VOLATILE ORGANIC COMPOUNDS: RECOMMENDATION TO THE SJVAPCO REGARDING VOC EMISSIONS FROM DAIRIES. FINAL REPORT (May 6, 2005) at 3.

⁷⁹ *Id.* at 18.

⁸⁰ *Id.* at 3.

⁸¹ *Id.* at 4.

⁸² *Id.*

⁸³ *Id.* at 15.

⁸⁴ *Id.* at cover page.

⁸⁵ JULIA LESTER, ENVIRON INTERNATIONAL, DPAG VIEWPOINT 1: TECHNICAL AND POLICY ASSESSMENT OF THE DPAG EMISSION FACTORS (May 31, 2005) available at http://www.valleyair.org/busind/pto/dpag/dpag_viewpoint1.pdf.

⁸⁶ DAVID A. GRANTZ, UC KEARNEY AGRICULTURAL CENTER, VOC EMISSION FACTOR FOR SJV DAIRIES, ARGUMENT FOR DPAG VIEWPOINT 2 A MID-RANGE POSITION (May 31, 2005) available at http://www.valleyair.org/busind/pto/dpag/dpag_viewpoint2.pdf.

⁸⁷ *Id.* at 29. (Emphasis in original).

2. SJVAPCD Final Report

a. Emissions Factor

On August 1, 2005, SJVAPCD officially released the APCO's Determination of VOC Emission Factors for Dairies.⁸⁸ Therein, the APCO formally adopted a VOC emission factor of 19.3 lb/hd-yr.⁸⁹ The APCO's calculation of the emission factor for VOCs was determined by adding together an adopted emission factor for each of the following constituents: (1) emissions from cows and feed in environmental chamber – 1.4 lb/hd-yr; (2) ethylamines from specific dairy processes – 0.2 lb/hd-yr; (3) VOCs (except volatile fatty acids (“VFAs”) and amines) from miscellaneous dairy processes – 1.2 lb/hd-yr; (4) VOCs (except VFAs and amines) from lagoons and storage ponds – 1.0 lb/hd-yr; (5) VFAs – 15.5 lb/hd-yr; (6) phenols from dairy processes – to be determined, but known to be greater than zero; (7) land application (of cattle waste) – to be determined, but known to be greater than zero; and (8) feed storage, settling basins, composting and manure disturbance – to be determined, but known to be greater than zero.⁹⁰

In reaching its determination, the APCO relied primarily upon DPAG's recommendations, but, used studies conducted outside of California for the determination of an emission factor with respect to non-enteric VFAs,⁹¹ a semi-constituent which, as stated above, now comprises eighty percent of the applicable VOC emissions factor. Prior to applying data obtained from studies conducted outside of California, the APCO “performed a detailed analysis comparing the research study conditions with process conditions at California dairies.”⁹² The APCO determined that the Hobbs et al. (Hobbs) study, Emissions of Volatile Organic Compounds Originating from UK Livestock Agriculture featured in the Journal of the Science of Food and Agriculture 2004©, represented wet process conditions (like flush lanes, solids separation, lagoons) in California, and the Koziel et al. (Koziel) study, Measurements of Volatile Fatty Acids Flux from Cattle Pens in Texas conducted at Texas Agricultural Experiment Station, Texas A&M University, were found to represent dry process conditions (like manure that is excreted and falls into dry exercise pens).⁹³ The Koziel study was conducted on a Texas feedlot

⁸⁸ Crow, *supra*, note 47 at cover page.

⁸⁹ *Id.* at 30.

⁹⁰ *Id.* at 12-13, 30.

⁹¹ *Id.* at 4.

⁹² *Id.*

⁹³ *Id.*

measuring emissions of beef cattle with a higher stocking density.⁹⁴ Because dairy processes are neither one hundred percent dry nor one hundred percent wet, due to the Mediterranean climate of the Valley, the APCO used the California Water Quality Control Board estimate of sixty percent/forty percent wet and dry respectively.⁹⁵ This proportionate estimate was applied to the emissions factors reported by the Hobbs and Koziel studies respectively to produce an emission factor for non-enteric VFAs to then be added to the enteric VFA emission reported by Dr. Mitloehner, and together, the sum of enteric and non-enteric VFAs, represent the 15.5 lb/hd-yr VFA constituent.⁹⁶ Be it noted that “Dr. Mitloehner and his collaborators advised DPAG and the APCO that the use of VFA concentration data is scientifically invalid for the determination of an emission factor because of the variation in the data” and the fact that certain measurements were not performed.⁹⁷ Despite such advice, the APCO determined that the lack of data with respect thereto was a correctable problem and used the data for its determination.⁹⁸

b. *Lowering of Threshold*

With the adoption of an emission factor of 19.3 lb/hd-yr, the threshold permitting requirement has been reduced from approximately 1,950 head of cattle to approximately 1,295 head. Approximately 230 Valley dairies had already applied for operating permits, but the imposition of the new emissions factor will require anywhere from another 150 to 250 dairies needing permits.⁹⁹

c. *Controversy of Science*

Although the APCO expressly reserved the right to adopt an emission factor different than that recommended by DPAG, such right was conditioned upon the APCO determining that the best available science shows that their dairy emissions factor is more accurate.¹⁰⁰ Did the APCO, in substituting the research of Hobbs and Koziel for Dr. Schmidt’s VFA

⁹⁴ Dairy Permitting Advisory Group, SJVAPCD, Dairy Emissions Factors for Volatile Organic Compounds: Recommendation to the SJVAPCO Regarding VOC emissions from Dairies. Final Report (May 6, 2005) at 10.

⁹⁵ Crow, *supra*, note 47 at 20.

⁹⁶ *Id.* at 26.

⁹⁷ *Id.* at 21.

⁹⁸ *Id.*

⁹⁹ Air District Issues Science-based Dairy Pollution Estimate, SJVAPCD, News Release (August 1, 2005).

¹⁰⁰ Settlement Agreement at 4, Western United Dairymen, et al. v. SJVUAPCD, et al. (Fresno Co. Sup. Ct. Cal. 2004) (No. 04CECG01596).

findings, violate the terms of the Settlement Agreement? In other words, are the Hobbs and Koziel research studies the best available science?

Proponents of Viewpoint 1 of the DPAG recommendation found Dr. Schmidt's findings the most appropriate to use, as it was the only study under review "that measured VFAs under conditions at a California dairy."¹⁰¹ Further, the testing methods used by Dr. Schmidt are EPA-approved, all measurements were made in an EPA-approved analytical method and all testing was conducted at all significant dairy area sources with the EPA-validated chamber.¹⁰² Under the case for Viewpoint 1, the "worst-case assumption of VFA emissions at the detection limit for all processes, the VFA emissions are 1.42 lbs/hd-yr."¹⁰³ However, Dr. Schmidt's measurements at all processes were below non-detect limits, measuring emissions of 0.47 lbs/hd-yr.¹⁰⁴ Additionally, the Koziel study was found by the DPAG under Viewpoint 1 to substantiate Dr. Schmidt's research.¹⁰⁵

It is further reported that the Hobbs research could not be used to calculate VFA emissions due to the absence of supporting science to sustain application of Hobbs emissions factors to California dairies.¹⁰⁶

Moreover, Dr. Mitloehner provided a follow-up to the APCO concerning his official measurements with respect to VFAs. As all data previously submitted by Dr. Mitloehner was "preliminary," Dr. Mitloehner's research officially conducted for the EPA, submitted in September 2005,¹⁰⁷ provided a comprehensive measurement of VFA compounds using a different method than that of Koziel and Hobbs. It is Dr. Mitloehner's position that the emission factor for enteric VFAs is "approximately 64 times higher than the highest concentration" resulting from his study.¹⁰⁸

Despite that other researchers have indicated that VFAs are quite adhesive and Viewpoint 2 did not include Dr. Schmidt's measurements therefor, is it an abuse of discretion on the part of the APCO to adopt a

¹⁰¹ Dairy Permitting Advisory Group, SJVAPCD, Dairy Emissions Factors for Volatile Organic Compounds: Recommendation to the SJVAPCO Regarding VOC emissions from Dairies. Final Report (May 6, 2005) at 9.

¹⁰² *Id.*

¹⁰³ *Id.* at 10.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ Letter from Frank Mitloehner, Ph.D, Air Quality CE Specialist, Director, Dept. of Animal Science, Agricultural Air Quality Research Center, UC Davis, to David Crow, APCO, SJVAPCD (July 25, 2005) (available at <http://www.valleyair.org/busind/ptodpag/Appendices/Appendix%2026%20Mitloehner%20letter%20to%20Crow.PDF>).

¹⁰⁸ *Id.*

potentially devastating emissions factor for the VFA constituent when the research relied upon in developing the factor is so controversial?

D. Did the District's Actions Violate terms of Settlement Agreement: Is Adopted Emissions Factor Based on the Best Available Science?

Before the release of the District's Report, researchers were of the opinion that "California's official dairy emissions factor of 12.8 lb/hd-yr may have been a third to a half too high."¹⁰⁹ Now, with the APCO's adoption of an emissions factor of 19.3 lb/hd-yr, it is believed that the "cattle in the San Joaquin Valley produce more organic compounds than are generated" by cars, trucks or pesticides.¹¹⁰ The emissions factor was adopted by APCO amidst the controversy surrounding the science, with one of the lead scientists involved, Dr. Mitloehner, now claiming that the findings have been misconstrued.¹¹¹ Furthermore, five members of Congress and twelve state legislators have demanded from the District a re-consideration of another draft estimate, calling the adopted factor "absurdly high."¹¹²

As the APCO named six guiding principles to follow in evaluating and selecting data for use in emissions factor development, it appears that the APCO may have departed from its own rules of construction.¹¹³ The guiding principle listed as number 3 provides direction as to selecting the best data when data is available for more than one source: tests performed at California dairies were to be given preference over data from other sources and "where test results from more than one source are...equivalent, an average emission factor is to be determined."¹¹⁴ Guiding principle number 5 provides that "[w]hen no valid source of quantitative VOC data could be linked to dairy processes is found, no emissions factor is to be determined, and the constituent or process emissions factor is to be reported as 'NA' or not available, and further research is to be recommended."¹¹⁵

¹⁰⁹ Catherine Merlo, *Clearer Skies*, Dairy Today, March 15, 2005.

¹¹⁰ Miguel Bustillo, *In San Joaquin Valley, Cows Pass Cars as Polluters*, L.A. TIMES, August 2, 2005, available at <http://www.latimes.com/news/local/la-me-cows2aug02,005709626.story?coll=la-home-headlines>.

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ Crow, *supra*, note 47 at 11.

¹¹⁴ *Id.* at 12.

¹¹⁵ *Id.*

On the other hand, the APCO's adopted emissions factor is backed with strong support from area scientists.¹¹⁶ However, these scientists did not participate in any of the research conducted relevant hereto, although one did serve as a member of DPAG.¹¹⁷

It is clear that the District has not exceeded its authority under SB 700 in adopting the emissions factor under the mandate of H & S Code Section 40724.6. However, whether the District has violated the terms of the Settlement Agreement is a matter yet to be addressed. The only definitive conclusion that can be reached at this point is that there is great controversy surrounding the 19.3 lb/hd-yr VOC emission factor. It remains to be seen whether the science is absolutely sound.

It is the dairy industry's contention that the APCO inappropriately relied upon foreign information where dairy practices are dissimilar to those in California and further urges that the California based-research was not afforded its due weight in developing the emissions factor.¹¹⁸ Representatives of the dairy industry assert that they will comply with whatever regulations are imposed in order to do their part in cleaning the air.¹¹⁹ However, the dairy industry does not want to be subject to regulations which require expensive changes to their operating facilities without adequate assurance that these changes are necessary to actually reduce emissions.¹²⁰ Advocates of the industry simply wish to ensure that the monies invested into control technologies are mandatory for emissions reductions.¹²¹

Although not officially reported, it is said that the District, possibly through the work of the DPAG, will be conducting further consideration of the methodologies employed in extracting the data upon which the emissions factor was determined. Supposedly, the District will be issuing a report concerning a study through which the methods employed are to be validated. Such report is said to be issued sometime in January 2006.

¹¹⁶ Air District Issues Science-based Dairy Pollution Estimate, SJVAPCD, News Release (August 1, 2005).

¹¹⁷ *Id.*

¹¹⁸ Christine Bedell, *Both Sides Take Aim at Dairy Figure*, BAKERSFIELD CALIFORNIAN, July 12, 2005 available at http://www.valleyair.org/recent_news/news_clippings/in%20the%20news%207-12-05.pdf.

¹¹⁹ Bob Browne, *Dairy Air Quality Study Continues to Feed Dispute*, Tracy Press, July 12, 2005 available at http://www.valleyair.org/recent_news/news_clippings/in%20the%20news%207-12-05.pdf.

¹²⁰ *Id.*

¹²¹ Dairy CARES Report, Community Alliance for Responsible Environmental Stewardship, September 2004, available at <http://www.dairycares.com>.

IV. RESOLUTION

Within days of APCO's issuance of the emissions factor, District officials conducted an inspection sweep to enforce permitting requirements that resulted in the issuance of six violations.¹²² Some of the alleged violators faced up to \$75,000 in potential fines for each day their dairies operated in noncompliance.¹²³

There is only one perfect solution to the Valley's air quality problem: electric or no-emission engines and enclosed dairies. However, neither have been fully developed. The technologies currently existing in which BACT implies is a great start, but also pose water quality issues beyond the scope of this Comment. The District's proposed BACT methods and technologies include flush water injection systems, lagoon elimination or reduction, increasing speed of manure transit to processing ponds, flush and irrigation management, complete aeration, Advance Microbial Treatment Systems, Water Reclamation Systems, aeration and wet combustion, anaerobic digesters (including covered lagoons vented to a Biofilter, Bio-Cap ML, complete mix anaerobic digester, Biogas Technology, Renewable Energy Works, and Cow Complex), and a multitude of other technologies.¹²⁴

Although a variety of technologies are available to dairymen to bring them into compliance with BACT requirements, dairymen are simultaneously subject to compliance with the Clean Water Act at the federal level and the California Environmental Quality Act. There exists a potential conflict between air quality regulations and water quality regulations that should not be left to the dairy industry to reconcile.

In the meantime, the dairy industry will be lawfully compelled to retrofit existing structures, implement new pollution-control technologies, and, overall, invest millions of dollars into complying with the regulations set forth by the SJVAPD through SB 700. It has been mentioned that dairymen may have to alter the dietary nature of cattle in order to meet the Valley's air quality requirements.¹²⁵ What is absolute at this point is that litigation is highly foreseeable if the District does not continue to work with the dairy industry in developing or determining a

¹²² Mark Grossi, *6 Dairies Cited for Unauthorized Building in Violation of Air Law*, THE FRESNO BEE, August 10, 2005, at Metro.

¹²³ *Id.*

¹²⁴ Proposed Parking Lot for Dairy Air Pollution Control Technologies. Draft Report, SJVAPCD, Liquid Manure BACT Workgroup (October 24, 2005).

¹²⁵ Miguel Bustillo, *In San Joaquin Valley, Cows Pass Cars as Polluters*, L.A. TIMES, August 2, 2005, available at <http://www.latimes.com/news/local/la-me-cows2aug02,0,05709626.story?coll=la-home-headlines>.

sounder science with which to base its emissions factor. Although the dairy industry at some time in the future will have to accept the emissions factor adopted by the District, whether it be the 19.3 lb/hd-yr or a modified factor, such acquiescence will only come when the science is adequately indisputable.

ELIZABETH A. MCGEE