



Air Pollution Control Board  
Brian P. Bilbray District 1  
Dianne Jacob District 2  
Pamela Slater District 3  
Leon L. Williams District 4  
John MacDonald District 5

Air Pollution Control Officer  
R. J. Sommerville

DATE: April 19, 1994  
TO: Air Pollution Control Board  
SUBJECT: Adoption of Amendments to Rule 67.10 (Kelp Processing and Bio-Polymer Manufacturing Operations)

### SUMMARY:

Rule 67.10 controls volatile organic compound (VOC) emissions from kelp processing and bio-polymer manufacturing operations. The proposed amendments are mandated by the federal Clean Air Act which requires major stationary sources to install reasonably available control technology (RACT). The amended rule also satisfies the California Clean Air Act requiring expeditious implementation of all feasible VOC control measures.

Rule 67.10 affects one company (Kelco, a division of Merck & Co.) emitting about 36% of the VOC's emitted from all permitted stationary sources in San Diego County. It will reduce emissions by approximately 1590 tons of VOC's per year (4.5 tons per day) and require installing an air pollution control system at the facility's main kelp processing and bio-polymer manufacturing plants to reduce fugitive VOC emissions (fugitive emissions are emissions that do not pass through a stack, e. g. duct leaks), modifying process parameters (e.g. lowering process liquid temperature), and/or installing specified equipment to minimize liquid leaks. In addition, the amendments will require reducing fugitive emissions from bio-polymer manufacturing operations at the facility's pilot plants and installing add-on control equipment on pilot plant dryers.

The proposed rule is consistent with the Board's direction of February 2, 1993 regarding implementation of new or revised rules because the federal Clean Air Act mandates the adoption of RACT level rules for major VOC emission sources. In addition, the Environmental Protection Agency (EPA) notified the District that a failure to submit a revised Rule 67.10 by July 15, 1994 will result in imposing federal sanctions including a 2.0 to 1.0 emission offset ratio for new and modified businesses and withholding up to \$75 million in federal transportation funds.

The socioeconomic impact assessment of the proposed amendments indicates the rule will not have a significant impact on employment or the economy of the region.

### Issue

Should the Board adopt amendments to Rule 67.10 (Kelp Processing and Bio-Polymer Manufacturing Operations) to reduce volatile organic compound emissions from kelp processing and bio-polymers manufacturing operations in San Diego County?

## **Recommendation**

### **AIR POLLUTION CONTROL OFFICER**

1. Set June 7, 1994 at 2:00 p.m., as the date and time for public hearing to consider the resolution adopting amended Rule 67.10 into the Rules and Regulations of the San Diego County Air Pollution Control District.
2. Direct the Clerk of the Board to notice the Hearing pursuant to Section 40725 of the State Health and Safety Code.
3. Following the hearing: (a) adopt the resolution adopting Rule 67.10, and (b) make appropriate findings:
  - (i) of necessity, authority, clarity, consistency, non-duplication and reference as required by Section 40727 of the State Health and Safety Code;
  - (ii) that amended Rule 67.10 will alleviate a problem and promote attainment of ambient air quality standards (Section 40001 of the State Health and Safety Code);
  - (iii) that an assessment of the socioeconomic impact of amended Rule 67.10 has been prepared and has been made available for public review and comment, and that the socioeconomic impacts of the proposed rule amendments have been actively considered and the District has made a good faith effort to minimize adverse socioeconomic impacts; and
  - (iv) that there is no reasonable possibility that the amended rule may have a significant effect on the environment, and that adoption of amended Rule 67.10 is categorically exempt from the provisions of the California Environmental Quality Act pursuant to California Code of Regulations, Title 14, Sections 15300 and 15308, as an action taken to assure the maintenance or protection of the environment and where the regulatory process involves procedures for protection of the environment.

## **Advisory Statement**

The Air Pollution Control Advisory Committee recommended adopting proposed amendments to Rule 67.10 at its March 30, 1994 meeting.

## **Fiscal Impact**

Adopting the proposed amendments to the rule will have no fiscal impact on the District.

## **Alternatives**

Not adopt amendments to Rule 67.10. The requirements of the federal Clean Air Act to adopt rules reflecting RACT for major VOC sources and the requirements of the California Clean Air Act to adopt all feasible VOC control measures would not be met. Also, the Environmental Protection Agency (EPA) notified the District that RACT rules for certain major VOC sources, including kelp processing and bio-polymer manufacturing operations, must be submitted before July 15, 1994 or EPA will impose sanctions (2.0 to 1.0 emission offset ratio for new and expanding major businesses and withholding up to \$75 million in federal transportation funds) on San Diego County. Accordingly, this alternative is not recommended.

## **BACKGROUND:**

The federal Clean Air Act requires all major sources of volatile organic compounds (VOC) (emitting 25 tons per year or more) to meet reasonably available control technology (RACT) requirements. Currently Rule 67.10 does not satisfy the EPA RACT requirements. EPA advised the District that it must submit RACT rules for major VOC sources, including kelp processing and bio-polymer manufacturing facilities, by July 15, 1994, or EPA will impose federal sanctions (2.0 to 1.0 emission offset ratio for new and expanding major industrial sources and withholding up to \$75 million in federal transportation funds) on San Diego County. In addition, the California Clean Air Act requires adopting all feasible VOC control measures. The proposed amendments will satisfy these requirements.

Kelco, a Division of Merck & Co., is the only facility subject to this rule. This facility, together with another Kelco plant in Okmulgee, Oklahoma, is the world's largest manufacturer of specialized products (alginates and biogums) used as ingredients in food, dairy, pharmaceutical, and industrial products, as well as processing aids in textile and paper manufacturing and oil field operations. Kelco's San Diego facility emits about 36% of the VOC's emitted from all permitted stationary sources in the county. The facility's annual emissions are approximately 2600 tons of volatile organic compounds (7.4 tons/day). The proposed amendments will require an air pollution control system at the facility's main kelp processing and bio-polymer manufacturing plants and modifying process parameters such as process liquid temperature, and/or by installing specified equipment such as doors on presses.

Since pilot plants alone were found to be a major federal emission source, the amendments will require reduced fugitive emissions from bio-polymer manufacturing operations at pilot plants and add-on control equipment on pilot plant dryers. The rule includes a compliance schedule providing up to 12 months for installing control equipment or making process modifications at bio-polymer manufacturing and pilot plant facilities, and up to 36 months for installing control equipment in the kelp processing facility.

New kelp processing or bio-polymer manufacturing lines or pilot plant facilities will be required to comply with Rule 67.10 at the time of equipment installation and start-up. However, the amendments exempt temporary equipment installed in a pilot plant facility for not longer than 120 days and having an emissions increase less than 10 lbs of VOC's per day provided records are kept to determine daily emissions. In addition, the amendments clarify the rule, update test methods and include new and updated definitions and recordkeeping requirements.

Section 40001 of the State Health and Safety Code requires the District to determine, prior to adopting any rule to reduce emissions of criteria pollutants, that the rule will alleviate a problem and promote the attainment or maintenance of state or federal air quality standards. San Diego County does not attain the state or federal ambient air quality standard for ozone. The proposed rule will reduce emissions of volatile organic compounds (ozone precursors) by 1590 tons per year, or 11% of total VOC emissions from all industrial and commercial sources in the county. Therefore, it will help alleviate San Diego County's ozone non-attainment problem by promoting attainment of state and federal ozone standards.

On February 2, 1993, the Air Pollution Control Board directed that, with the exception of a regulation requested by business or a regulation for which a socioeconomic impact assessment is not required, no new or revised regulation shall be implemented unless specifically required by federal or state law. The proposed amendments to Rule 67.10 are mandated by the federal Clean Air Act which requires all major sources of VOC and NOx emissions be controlled by rules reflecting RACT. Failure to submit the rule amendments to EPA before July 15, 1994 will result in federal sanctions on San Diego County. Proposed Rule 67.10 also complies with the Cali-

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ifornia Clean Air Act requirements to adopt all feasible control measures. Accordingly, amending Rule 67.10 is consistent with the February 2, 1993 Board direction.

### **Socioeconomic Impact Assessment**

Section 40728.5 of the State Health and Safety Code requires the District to perform a socioeconomic impact assessment (SIA) for new and revised rules and regulations significantly affecting air quality or emission limitations. The amendments to Rule 67.10 impose new emission limitations on kelp processing and bio-polymer manufacturing operations. Accordingly, an SIA was prepared by the District and made available for public comments. While preparing the amendments to Rule 67.10, the District met frequently with Kelco representatives and made changes to minimize adverse socioeconomic impacts.

The cost-effectiveness of the individual requirements of the proposed amendments are estimated to be in a range of \$0.10 to \$1.32 per pound of VOC reduced. This is significantly better than the cost-effectiveness of any other VOC control measures adopted by the District, or included in the San Diego Regional Air Quality Strategy. In addition, the changes are expected to achieve a greater emission reduction (more than 4.5 tons per day) than any other VOC control measure adopted by the District in the past ten years.

As a result of the new requirements, Kelco is expected to incur an approximately \$4.3 million capital expenditure and annual operating costs of \$480,000. This equates to a total annualized cost of approximately \$1.2 million. While the overall compliance costs represent significant capital and annual expenses for Kelco, the estimated product cost increase will be marginal, a maximum of 2% depending on the specific product. Since the compliance costs will result in a marginal product cost increase and because of the company's status as the world's largest manufacturer of these products, it is unlikely the affected firm would leave San Diego County, reduce its work force, or completely close its business.

It should also be noted that the financial impact estimates may be conservatively high. Reducing fugitive emissions of isopropyl alcohol, one of the major components in kelp processing and bio-polymer manufacturing processes, will also provide significant savings of isopropyl alcohol and consequently reduce the cost of alginate and biogum production. These savings were not taken into account when calculating compliance costs.

### **California Environmental Quality Act**

The California Environmental Quality Act requires an environmental review for certain actions. No significant adverse impacts on the environment have been suggested; no such impacts are reasonably possible. Adopting the proposed amendments to Rule 67.10 will not have a significant effect on the environment and is categorically exempt from the provisions of the California Environmental Quality Act pursuant to California Code of Regulations, Title 14, Sections 15300 and 15308, as an action taken to assure the maintenance or protection of the environment where the regulatory process involves procedures for protection of the environment.


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Public workshops on proposed Rule 67.10 were held on November 24, 1992 and August 24, 1993. The workshop reports and Socioeconomic Impact Assessment are attached.

Concurrence:

Respectfully submitted,

DAVID E. JANSSEN  
Chief Administrative Officer



R. J. SOMMERVILLE  
Air Pollution Control Officer

APRIL 19, 1994  
MEETING DATE

FINDINGS OF THE SAN DIEGO COUNTY AIR POLLUTION  
CONTROL BOARD IN RESPECT TO ADOPTION OF  
AMENDMENTS TO RULE 67.10 (KELP PROCESSING  
AND BIO-POLYMER MANUFACTURING OPERATIONS)

- A. Pursuant to section 40727 of the Health and Safety Code, the Air Pollution Control Board of the San Diego County Air Pollution Control District makes the following findings:
1. (Necessity) The adoption of the proposed amendments to District Rule 67.10 is necessary for the District to satisfy the requirements of section 182(a)(1)(A) of the federal Clean Air Act requiring correction of rules relating to reasonably available control technology for new or modified stationary sources, and California Health and Safety Code sections 40914 requiring adoption of all feasible measures for reducing emissions of volatile organic compounds and 40919 requiring application of best available retrofit control technology to existing stationary sources.
  2. (Authority) The adoption of the proposed rule amendments is authorized by Health and Safety Code sections 40001, 40702 and 40914.
  3. (Clarity) The proposed rule amendments are written so that their meaning can be easily understood by persons directly affected by the rule.
  4. (Consistency) The proposed rule amendments are in harmony with, and not in conflict with or contrary to, existing statutes, court decisions, and State law and Federal regulations.
  5. (Nonduplication) The proposed amendments do not impose the same requirements as an existing state or federal regulation.
  6. (Reference) The adoption of the proposed amendments implements section 182(a)(1)(A) of the federal Clean Air Act [42 U.S.C. section 7511a(a)(1)(A)], and California Health and Safety Code sections 40914 and 40919.
- B. The Air Pollution Control Board further finds that an assessment of socioeconomic impacts of the proposed rule amendments was performed and made available for public comment and review pursuant to Health and Safety Code section 40728.5, and that the socioeconomic impacts of the proposed rule amendments have been actively considered and the District has made a good faith effort to minimize adverse socioeconomic impacts.
- C. The Air Pollution Control Board further finds that there is no reasonable possibility that the amended rule may have a significant effect on the environment, and that the adoption of the proposed amendments is categorically exempt from the provisions of the California Environmental Quality Act pursuant to California Code of Regulations, title 14, sections 15300 and 15308, as an action taken to assure the protection of the environment which will not have a significant effect on the environment and where the regulatory process involves procedures for protection of the environment.
- D. The Air Pollution Control Board further finds in accordance with Health and Safety Code section 40001 that the adoption of the proposed rule amendments is necessary to satisfy federal and state law, and that the proposed amendments will promote the attainment of state and federal ambient air quality standards.

Re Rules and Regulations of the)  
Air Pollution Control District )  
of San Diego County . . . . .)

NO. 94-209 (LAPCB) WEDNESDAY, JUNE 15, 1994

**RESOLUTION AMENDING RULE 67.10  
TO REGULATION IV  
OF THE RULES AND REGULATIONS OF THE  
SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT**

On motion of Member MacDonald, seconded by Member Slater  
the following resolution is adopted:

**WHEREAS**, the San Diego County Air Pollution Control Board, pursuant to Section 40702 of the Health and Safety Code, adopted Rules and Regulations of the Air Pollution Control District of San Diego County; and

**WHEREAS**, said Board now desires to amend said Rules and Regulations; and

**WHEREAS**, notice has been given and a public hearing has been had relating to the amendment of said Rules and Regulations pursuant to Section 40725 of the Health and Safety Code.

**NOW THEREFORE IT IS RESOLVED AND ORDERED** by the San Diego County Air Pollution Control Board that the Rules and Regulations of the Air Pollution Control District of San Diego County be and hereby are amended as follows:

Proposed amendments to Rule 67.10 are to read as follows:

**RULE 67.10. KELP PROCESSING AND BIO-POLYMER MANUFACTURING OPERATIONS**

**(a) APPLICABILITY**

(1) Except as otherwise provided in Section (b), this rule is applicable to any kelp processing or bio-polymer manufacturing line, or associated pilot plant facility, where volatile organic compounds (VOC's) are used as reactants, solvents or extractants or used to separate or purify the products of kelp processing or bio-polymer manufacturing line operations.

(2) Kelp processing and bio-polymer manufacturing operations subject to, or exempt from, this rule shall not be subject to Rule 66.

**(b) EXEMPTIONS**

The provisions of Sections (d), (e), and (g) of this rule shall not apply to:

(1) Any kelp processing or bio-polymer manufacturing line where emissions of VOC's, at the maximum design capacity of the line, are no greater than 15 pounds in any



one day, provided total emissions of VOC's from all kelp processing or bio-polymer manufacturing equipment located at a stationary source are no greater than 100 pounds in a day. It shall be the responsibility of a person claiming this exemption to maintain daily records necessary for the District to determine the applicability of such an exemption; and

(2) Fuel oil; and

(3) Laboratory facilities used exclusively for research and development provided that monthly records are kept of the usage of VOC containing materials ; and

(4) Any low volatility organic compound which has a normal boiling point of 185°C or greater. Any person claiming this exemption shall maintain written records which substantiate the claim such as applicable manufacturer's specifications or, for pure compounds, standard reference texts.

(5) Any temporary equipment installed in a pilot plant facility and resulting in an emissions increase not exceeding 10 pounds of VOC's per day. It shall be the responsibility of a person claiming this exemption to maintain daily records necessary for the District to determine the applicability of such an exemption.

All records pursuant to Subsections (b)(1), (b)(3), (b)(4), and (b)(5) shall be retained on site for at least two years and shall be submitted to the District upon request.

#### (c) DEFINITIONS

For the purpose of this rule the following definitions shall apply:

(1) **"Approved Air Pollution Control Device"** means a single piece of equipment or combination of pieces of equipment which is designed to reduce the emissions of air contaminants and which is approved, in writing, by the Air Pollution Control Officer.

(2) **"Bio-polymer Manufacturing Line"** means one or more pieces of equipment linked by a process flow in which a bio-polymer or any of its precursors is dried, extracted, filtered, mixed or reacted with any VOC where the end product cannot be produced if any piece of equipment is removed or not functioning.

(3) **"Drier"** means a device used to remove water and/or VOC's from a material by applying heat, by flowing unsaturated air, or by subjecting the material to vacuum, or any combination thereof.

(4) **"Exempt Compound"** means any of the following compounds or classes of compounds: 1,1,1-trichloroethane, methylene chloride, trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), trifluoromethane (HFC-23), trichlorotrifluoroethane (CFC-113), dichlorotetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), chlorodifluoromethane (HCFC-22), dichlorotrifluoroethane (HCFC-123), dichlorofluoroethane (HCFC-141b), 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1,2,2-tetrafluoroethane (HFC-134), chlorodifluoroethane (HCFC-142b), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125), 1,1,1-trifluoroethane (HFC-143a), 1,1-difluoroethane (HFC-152a), and the following four classes of perfluorocarbon (PFC) compounds:

(i) cyclic, branched, or linear, completely fluorinated alkanes;

(ii) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

(iii) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

(iv) sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

(5) **"Fugitive Liquid Leak"** means a visible leak of liquid, containing greater than 10 percent by weight VOC, at a rate in excess of three drops per minute, or a visible mist. For the purposes of this rule, a liquid leak dropping into a capture system which is connected to an air pollution control device shall not be considered a fugitive liquid leak.

(6) **"Incorporator"** means a device in which a solid and a VOC introduced into the device are mixed, where it is not intended that the VOC chemically modify the solid.

(7) **"In-Process Tank"** means a tank, which is part of a kelp processing or bio-polymer manufacturing line or pilot plant facility and which is used to handle or transfer VOC-containing material. In-process tanks include spent pots, but exclude stationary storage tanks.

(8) **"Kelp Processing Line"** means one or more pieces of equipment linked by a process flow in which kelp or any of its derivatives is dried, extracted, filtered, mixed, or reacted with any VOC where the end product cannot be produced if any piece of equipment is removed or not functioning.

(9) **"Laboratory Facility"** means a facility which uses bench-scale or small-scale equipment for the purpose of conducting studies or tests for the research, development or evaluation of a product, process, or service.

(10) **"Pilot Plant Facility"** means a facility which uses small-scale or intermediate-scale process equipment.

(11) **"Press"** means a mechanical device for separating liquids from solids.

(12) **"Reactor"** means a device in which a chemical reaction takes place between two or more materials introduced into the device, where a VOC chemically modifies one or more materials.

(13) **"Research and Development"** means bench-scale or small-scale kelp and/or bio-polymer processing operations, including operations performed for purposes of testing and quality control, which are not used for production purposes to produce a salable product or service, other than the first-article product or service.

(14) **"Spent Pot"** means the container where VOC-containing liquid is collected immediately after being discharged from a press.

(15) **"Stationary Source"** means the same as is defined in Rule 20.1.

(16) **"Stationary Storage Tank"** means any tank, reservoir, or other container used to store, but not transport, VOC. Stationary storage tanks do not include tanks used to separate solids from process streams or spent pots.

(17) **"Still"** means a device designed to separate, in whole or in part, the constituents of a mixture of miscible liquids by heating the liquid mixture and preferentially condensing and collecting the vapors.

(18) **"Temporary Equipment"** for the purposes of the exemption in Subsection (b)(5), means equipment located at a pilot plant facility for a period not exceeding 90 days in any consecutive twelve-month period.

(19) **"Volatile Organic Compound (VOC)"** means any volatile compound containing at least one atom of carbon excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonates, and exempt compounds which may be emitted to the atmosphere during operations subject to any provision of this rule.

**(d) STANDARDS**

(1) A person shall not operate any kelp processing or bio-polymer manufacturing line unless all aboveground stationary storage tanks, having capacities greater than 20,000 gallons, containing VOC used in conjunction with the line are equipped with pressure-vacuum relief valves which have minimum relief settings of 5 oz/sq. in. (pressure) and 0.5 oz/sq. in. (vacuum). Tanks with capacities greater than 50,000 gallons shall have minimum relief settings of 0.5 oz/sq. in. (pressure) and 0.5 oz/sq. in. (vacuum).

(2) A person shall not operate any kelp processing or bio-polymer manufacturing line or pilot plant facility unless all piping, valves, fittings, tanks, stills, process equipment and other devices used to transport, store, react or process VOC or materials containing VOC are free of fugitive liquid leaks. A fugitive liquid leak from incorporators shall only be considered a violation of this rule if the liquid contains more than 50 percent by weight of VOC.

Repair of a fugitive liquid leak may be delayed until the leaking equipment is next scheduled to be off-line, or a production cycle is completed, or within 72 hours of detection, whichever occurs first, provided:

(i) The time, date and location of the leak are recorded promptly following detection;

(ii) All practicable steps to minimize the magnitude of the leak are taken as soon as possible following detection; and

(iii) The record required by Subsection (d)(2)(i) is made available to the Air Pollution Control Officer upon request.

An unrecorded leak shall be considered a violation of this rule. The provisions of this subsection shall become effective *(thirty-six months after date of adoption)* for presses in a kelp processing manufacturing line.

This subsection shall not apply to liquid losses occurring during maintenance, repair or back flushing of process and storage equipment.

(3) A person shall not operate any kelp processing or bio-polymer manufacturing line or pilot plant facility unless each in-process tank for material containing VOC is equipped with an apparatus or cover which completely covers the tank but not necessarily provides a vapor tight seal, and which is closed or in place at all times except as necessary to meet operating requirements or for maintenance.

(4) A person shall not operate any bio-polymer manufacturing line unless the total emissions of VOC's to the atmosphere from all driers used in conjunction with all lines are reduced by at least 95 percent by weight by means of an approved air pollution control device. This requirement shall not apply to driers whose exhaust contains VOC at an average concentration of 200 ppmv or less over a complete batch or cycle. Emissions of VOC occurring during the transfer of materials containing VOC into or out of a drier shall be included when determining emissions from that drier.

(5) A person shall not operate a kelp processing line unless the total emissions of VOC to the atmosphere from all driers and reactors used in conjunction with all affected lines are reduced by means of an approved air pollution control device as follows:

(i) For kelp processing lines or portions of lines where the primary VOC being emitted is not a process reactant or byproduct of a process reaction, by at least 95 percent by weight.

(ii) For kelp processing lines or portions of lines where the primary VOC being emitted is a process reactant or byproduct of a process reaction, by at least 80 percent by weight.

Emissions of VOC occurring during the transfer of materials containing VOC into or out of a drier or reactor shall be included when determining emissions from the drier or reactor.

(6) A person shall not operate any pilot plant facility unless the total emissions of VOC's to the atmosphere from all driers used in conjunction with all lines are reduced by at least 95 percent by weight by means of an approved air pollution control device. This requirement shall not apply to driers whose exhaust contains VOC at an average concentration of 200 ppmv or less over a complete batch or cycle. Emissions of VOC occurring during the pneumatic transfer of materials containing VOC into or out of a drier shall be included when determining emissions from that drier. Emissions of VOC occurring during manual transfer of materials containing VOC into or out of a drier shall not be included when determining emissions from that drier, provided the containers used to transfer the materials are covered after filling and prior to discharge.

(7) Equipment, devices and systems in use to transport and control VOC emissions pursuant to Subsections (d)(4), (d)(5) and (d)(6) shall be maintained so as to be free of visible holes, breaks, openings or separations between adjoining components, that are not consistent with their design and intended operating function, from which fugitive VOC vapors would be emitted to the atmosphere.

(8) An operation and maintenance program shall be submitted to the Air Pollution Control Officer for approval for new equipment required by Subsections (d)(4), (d)(5), (d)(6) and (d)(11). An existing operation and maintenance program that has been approved by the Air Pollution Control Officer need not be resubmitted for approval as a result of amendments to this rule unless such approved operation and maintenance program is revised. Each program shall be implemented and maintained on approval of the Air Pollution Control Officer.

Each operation and maintenance program submitted for approval shall:

(i) Maintain the VOC emission reduction efficiency required under Subsections (d)(4), (d)(5), (d)(6) and (d)(11); and

(ii) Identify and maintain all key system operating parameters. Key system operating parameters are those parameters, such as temperature, pressure, and/or flow rate, necessary to maintain the VOC emission reduction efficiency required under Subsections (d)(4), (d)(5), (d)(6) and (d)(11); and

(iii) Include proposed inspection schedules, anticipated ongoing maintenance steps and proposed daily recordkeeping practices regarding the key system operating parameters.

Each program will apply only to the equipment necessary to meet the requirements of Subsections (d)(4), (d)(5), (d)(6) and (d)(11) and need not include inspection, maintenance or recordkeeping relevant to compliance with Subsection (d)(7).

(9) Compliance with Subsections (d)(4), (d)(5), (d)(6), and (d)(11) shall be determined based upon tests or observations of the process equipment and air pollution control system during a period of at least 16 hours, but not more than 24 hours. Affirmative determination of compliance may be demonstrated through tests or observations for a shorter period of time provided such period of time has been determined appropriate in writing by the Air Pollution Control Officer. Such a shorter test period shall not be the basis for determining non-compliance.

(10) A person shall not operate any kelp processing or bio-polymer manufacturing line or pilot plant facility unless:

(i) Pumps processing VOC-containing material are equipped with dual mechanical seals, or equipped with other leak-free technology that has been approved in writing by the Air Pollution Control Officer and provided that the equipment complies with Subsection (d)(2); and

(ii) Liquid process mixtures containing VOC's are maintained at a temperature not higher than 115°F (46°C) before entering a press; and

(iii) Presses are equipped with sealing door covers.

(11) A person shall not operate any kelp processing or bio-polymer manufacturing line or pilot plant facility unless:

(i) The total uncontrolled emissions of VOC to the atmosphere from presses, and spent pots are captured by an emission collection system and the captured emissions are transported to an air pollution control device; and

(ii) The combined emissions capture and control device efficiency is at least 75% by weight.

#### **(e) RECORDKEEPING**

Any person subject to the requirements of Section (d) of this rule shall maintain the following records:

(1) A current list of VOC's, subject to this rule that are in use, and

(2) For air pollution control equipment, maintain records sufficient to document compliance, such as daily records of process and key system operating parameters and maintenance performed pursuant to Subsections (d)(4), (d)(5), (d)(6), (d)(8), and (d)(11)



which will demonstrate continuous operation and compliance of the emission control device during periods of emission producing activities.

All records shall be retained on site for at least two years, and shall be made available to the District upon request.

**(f) VOC TEST METHODS**

(1) The VOC content of fluids subject to Subsections (c)(5) and (d)(2) of this rule shall be determined in accordance with ASTM Standard Recommended Practices for General Gas Chromatography Procedures, E 260-73, General Techniques of Infrared Quantitative Analysis, E 168-67, or General Techniques of Ultraviolet Quantitative Analysis, E 169-63.

(2) The determination of the normal boiling point of an organic compound pursuant to Subsection (b)(4) shall be conducted in accordance with ASTM Standard Test Method for Distillation Range of Volatile Organic Liquids, D 1078-86 or, for pure compounds, may be made from technical data contained in standard reference texts.

(3) Measurements of VOC emissions subject to Subsections (d)(4), (d)(5), (d)(6), and (d)(11) of this rule shall be conducted in accordance with EPA Test Methods 18 and 25 or 25A (40 CFR, Appendix A) as they exist on *(date of adoption)*. Test procedures shall be performed in accordance with a protocol approved by the Air Pollution Control Officer. An alternative method to EPA Test Method 18 may be used provided such method has been approved, in advance, by the Air Pollution Control Officer and U.S. Environmental Protection Agency for the specific processes being tested. Subsequent to the initial compliance demonstration period, appropriate parameters as determined by the Air Pollution Control Officer may be used as indicators of the performance of the emission control system.

**(g) COMPLIANCE SCHEDULE**

(1) Any person operating an existing bio-polymer manufacturing line or pilot plant facility which is subject to the provisions of Subsections (d)(6), (d)(10) and/or (d)(11) shall meet the following increments of progress:

(i) By *(six months after date of adoption)*, submit to the Air Pollution Control Officer an application for Authority to Construct and Permit to Operate the equipment specified in Subsections (d)(6), (d)(10) and/or (d)(11).

(ii) By *(twelve months after date of adoption)*, demonstrate compliance with Subsections (d)(6), (d)(10), and/or (d)(11).

(2) Any person operating an existing kelp processing line which is subject to the provisions of Subsections (d)(10) and/or (d)(11) shall meet the following increments of progress:

(i) By *(twelve months after date of adoption)*, submit to the Air Pollution Control Officer an application for Authority to Construct and Permit to Operate the equipment specified in Subsections (d)(10) and/or (d)(11).

(ii) By *(eighteen months after date of adoption)*, demonstrate compliance with Subsection (d)(10).

(iii) By (thirty-six months after date of adoption), demonstrate compliance with Subsection (d)(11).

(3) Any person installing a new kelp processing or bio-polymer manufacturing line or pilot plant facility which is subject to the provisions of Section (d) shall have equipment necessary to comply with the provisions of Section (d) installed and operating upon startup of the line or facility and shall demonstrate compliance within 180 days of startup.

**IT IS FURTHER RESOLVED AND ORDERED** that the subject amendment of Rule 67.10 to Regulation IV shall take effect upon adoption.

**PASSED AND ADOPTED** by the Air Pollution Control Board of the San Diego County Air Pollution Control District, State of California, this 15th day of June, 1994 by the following votes:

**AYES:** Bilbray, Slater, MacDonald  
**NOES:** None  
**ABSENT:** Williams  
**ABSTAIN:** Jacob

STATE OF CALIFORNIA) ss  
County of San Diego)

I hereby certify that the foregoing is a full, true, and correct copy of the Original Resolution which is now on file in my office.



THOMAS J. PASTUSZKA  
Clerk of the Board of Supervisors

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AIR POLLUTION CONTROL DISTRICT  
SAN DIEGO COUNTY

AMENDMENTS TO RULE 67.10

CHANGE COPY

Proposed amendments to Rule 67.10 are to read as follows:

**RULE 67.10. KELP PROCESSING AND BIO-POLYMER MANUFACTURING OPERATIONS**

**(a) APPLICABILITY**

(1) Except as otherwise provided in Section (b), this rule is applicable to any kelp processing or bio-polymer manufacturing line, or associated pilot plant facility, where volatile organic compounds (VOC's) are used as reactants, solvents or extractants or used to separate or purify the products of kelp processing or bio-polymer manufacturing line operations.

(2) Kelp processing and bio-polymer manufacturing operations subject to, or exempt from, this rule shall not be subject to Rule 66.

**(b) EXEMPTIONS**

The provisions of Sections (d), (e), and (g) of this This rule shall not be applicable apply to:

(1) Any kelp processing or bio-polymer manufacturing line where emissions of VOC's, at the maximum design capacity of the line, are no greater than 15 pounds in any one day, provided total emissions of VOC's from all kelp processing or bio-polymer manufacturing equipment located at a stationary source are no greater than 100 pounds in a day. It shall be the responsibility of a person claiming this exemption to maintain daily records necessary for the District to determine the applicability of such an exemption; and

(2) Fuel oil; and

(3) Laboratory ~~and pilot plant~~ facilities used exclusively for research and development provided that monthly records are kept of the usage of VOC containing materials ; and

(4) Any low volatility organic compound which has a normal boiling point of 185°C or ~~more~~ greater. Any person claiming this exemption shall maintain written records which substantiate the claim such as applicable manufacturer's specifications or, for pure compounds, standard reference texts.

(5) Any temporary equipment installed in a pilot plant facility and resulting in an emissions increase not exceeding 10 pounds of VOC's per day. It shall be the responsibility of a person claiming this exemption to maintain daily records necessary for the District to determine the applicability of such an exemption.

All records pursuant to Subsections (b)(1), (b)(3), ~~and (b)(4), and (b)(5)~~ shall be retained on site for at least two years and shall be submitted to the District upon request.



(c) **DEFINITIONS**

For the purpose of this rule the following definitions shall apply:

(1) **"Approved Air Pollution Control Device"** means a single piece of equipment or combination of pieces of equipment which is designed to reduce the emissions of air contaminants and which is approved, in writing, by the Air Pollution Control Officer.

(2) **"Bio-polymer Manufacturing Line"** means one or more pieces of equipment linked by a process flow in which a bio-polymer or any of its precursors is dried, extracted, filtered, mixed or reacted with any VOC where the end product cannot be produced if any piece of equipment is removed or not functioning.

(2)(3) **"Drier"** means a device used to remove water and/or VOC's from a material by applying heat, by flowing unsaturated air, or by subjecting the material to vacuum, or any combination thereof.

(4) **"Exempt Compound"** means any of the following compounds or classes of compounds: 1,1,1-trichloroethane, methylene chloride, trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), trifluoromethane (HFC-23), trichlorotrifluoroethane (CFC-113), dichlorotetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), chlorodifluoromethane (HCFC-22), dichlorotrifluoroethane (HCFC-123), dichlorofluoroethane (HCFC-141b), 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1,2,2-tetrafluoroethane (HFC-134), chlorodifluoroethane (HCFC-142b), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125), 1,1,1-trifluoroethane (HFC-143a), 1,1-difluoroethane (HFC-152a), and the following four classes of perfluorocarbon (PFC) compounds:

(i) cyclic, branched, or linear, completely fluorinated alkanes;

(ii) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

(iii) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

(iv) sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

(3)(5) **"Fugitive Liquid Leak"** means a visible leak of liquid, containing greater than 10 percent by weight VOC, at a rate in excess of three drops per minute, or a visible mist, sufficient to cause a continuous stream or a pressurized spray of liquid droplets. An exposed process stream containing VOC moving from one piece of process equipment to another or within a piece of process equipment is not a fugitive liquid leak. For the purposes of this rule, a liquid leak dropping into a capture system which is connected to an air pollution control device shall not be considered a fugitive liquid leak.

(4)(6) **"Incorporator"** means a device in which a solid and a VOC introduced into the device are mixed, where it is not intended that the VOC chemically modify the solid.

(7) **"In-Process Tank"** means a tank, which is part of a kelp processing or bio-polymer manufacturing line or pilot plant facility and which is used to handle or transfer VOC-containing material. In-process tanks include spent pots, but exclude stationary storage tanks.

(5)(8) **"Kelp Processing Line"** means one or more pieces of equipment linked by a process flow in which kelp or any of its derivatives is dried, extracted, filtered, mixed, or

reacted with any VOC where the end product cannot be produced if any piece of equipment is removed or not functioning.

(9) "Laboratory Facility" means a facility which uses bench-scale or small-scale equipment for the purpose of conducting studies or tests for the research, development or evaluation of a product, process, or service.

(10) "Pilot Plant Facility" means a facility which uses small-scale or intermediate-scale process equipment.

(6)(11) **"Press"** means a mechanical device for separating liquids from solids.

(7)(12) **"Reactor"** means a device in which a chemical reaction takes place between two or more materials introduced into the device, where a VOC chemically modifies one or more materials.

(13) "Research and Development" means bench-scale or small-scale help and/or bio-polymer processing operations, including operations performed for purposes of testing and quality control, which are not used for production purposes to produce a salable product or service, other than the first-article product or service.

~~(8) "Bio-polymer Manufacturing Line" means one or more pieces of equipment linked by a process flow in which a bio-polymer or any of its precursors is dried, extracted, filtered, mixed or reacted with any VOC where the end product cannot be produced if any piece of equipment is removed or not functioning.~~

(14) "Spent Pot" means the container where VOC-containing liquid is collected immediately after being discharged from a press.

(9)(15) **"Stationary Source"** means the same as is defined in Rule 20.1.

(10)(16) **"Stationary Storage Tank"** means any tank, reservoir, or other container used to store, but not transport, VOC. Stationary storage tanks do not include tanks used to separate solids from process streams or spent pots.

(11)(17) **"Still"** means a device designed to separate, in whole or in part, the constituents of a mixture of miscible liquids by heating the liquid mixture and preferentially condensing and collecting the vapors.

(12) **"Volatile Organic Compound" (VOC)** means any compound containing at least one atom of carbon, except: methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, methylene chloride, 1,1,1-trichloroethane, trichlorofluoromethane (CFC 11), dichlorodifluoromethane (CFC 12), chlorodifluoromethane (CFC 22), trifluoromethane (CFC 23), trichlorotrifluoroethane (CFC 113), dichlorotetrafluoroethane (CFC 114), and chloropentafluoroethane (CFC 115), dichlorotrifluoroethane (HCFC 123), dichlorofluoroethane (HCFC 141b), tetrafluoroethane (HFC 134a) and chlorodifluoroethane (HCFC 142b).

(18) "Temporary Equipment" for the purposes of the exemption in Subsection (b)(5), means equipment located at a pilot plant facility for a period not exceeding 90 days in any consecutive twelve-month period.

(19) "Volatile Organic Compound (VOC)" means any volatile compound containing at least one atom of carbon excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonates, and exempt

compounds which may be emitted to the atmosphere during operations subject to any provision of this rule.

(d) **STANDARDS**

(1) A person shall not operate any kelp processing or bio-polymer manufacturing line unless all aboveground stationary storage tanks, having capacities greater than 20,000 gallons, containing VOC used in conjunction with the line are equipped with pressure-vacuum relief valves which have minimum relief settings of 5 oz/sq. in. (pressure) and 0.5 oz/sq. in. (vacuum). Tanks with capacities greater than 50,000 gallons shall have minimum relief settings of 0.5 oz/sq. in. (pressure) and 0.5 oz/sq. in. (vacuum).

(2) A person shall not operate any kelp processing or bio-polymer manufacturing line or pilot plant facility unless all piping, valves, fittings, tanks, stills, process equipment ~~(excluding presses)~~ and other devices used to transport, store, react or process VOC or materials containing VOC are free of fugitive liquid leaks. A fugitive liquid leak from incorporators shall only be considered a violation of this rule if the liquid contains more than 50 percent by weight of VOC.

Repair of a fugitive liquid leak may be delayed until the leaking equipment is next scheduled to be off-line, or a production cycle is completed, or within 72 hours of detection, whichever occurs first, provided:

(i) The time, date and location of the leak are recorded promptly following detection;

(ii) All practicable steps to minimize the magnitude of the leak are taken as soon as possible following detection; and

~~(iii) The repair is made within 72 hours of detection; and~~

~~(iv)~~(iii) The record required by Subsection (d)(2)(i) is made available to the Air Pollution Control Officer upon request.

An unrecorded leak shall be considered a violation of this rule. ~~Effective May 21, 1992, any Any part of a kelp processing or bio-polymer operating line which becomes subject to this subsection due to change in the definition (c)(3) shall be in compliance with Subsection (d)(2). The provisions of this subsection shall become effective~~(thirty-six months after date of adoption) for presses in a kelp processing manufacturing line.

This subsection shall not apply to liquid losses occurring during maintenance, repair or back flushing of process and storage equipment.

(3) A person shall not operate any kelp processing or bio-polymer manufacturing line or pilot plant facility unless each in-process tank for material containing VOC is equipped with an apparatus or cover which completely covers the tank but not necessarily provides a vapor tight seal, and which is closed or in place at all times except as necessary to meet operating requirements or for maintenance.

(4) A person shall not operate any bio-polymer manufacturing line unless the total emissions of VOC's to the atmosphere from all driers used in conjunction with all lines are reduced ~~by means of a control device~~ by at least 95 percent by weight by means of an approved air pollution control device. This requirement shall not apply to driers whose exhaust contains VOC at an average concentration of 200 ppmv or less over a complete batch or cycle. Emissions of VOC occurring during the transfer of materials containing VOC into or out of a drier shall be included when determining emissions from that drier.

(5) A person shall not operate a kelp processing line unless the total emissions of VOC to the atmosphere from all driers and reactors used in conjunction with all affected lines are reduced by means of a an approved air pollution control device as follows:

(i) For kelp processing lines or portions of lines where the primary VOC being emitted is not a process reactant or byproduct of a process reaction, by at least 95 percent by weight.

(ii) For kelp processing lines or portions of lines where the primary VOC being emitted is a process reactant or byproduct of a process reaction, by at least 80 percent by weight.

Emissions of VOC occurring during the transfer of materials containing VOC into or out of a drier or reactor shall be included when determining emissions from the drier or reactor.

(6) A person shall not operate any pilot plant facility unless the total emissions of VOC's to the atmosphere from all driers used in conjunction with all lines are reduced by at least 95 percent by weight by means of an approved air pollution control device. This requirement shall not apply to driers whose exhaust contains VOC at an average concentration of 200 ppmv or less over a complete batch or cycle. Emissions of VOC occurring during the pneumatic transfer of materials containing VOC into or out of a drier shall be included when determining emissions from that drier. Emissions of VOC occurring during manual transfer of materials containing VOC into or out of a drier shall not be included when determining emissions from that drier, provided the containers used to transfer the materials are covered after filling and prior to discharge.

~~(6)(7)~~ Equipment, devices and systems in use to transport and control VOC emissions pursuant to Subsections (d)(4), ~~and (d)(5) and (d)(6)~~ shall be maintained so as to be free of visible holes, breaks, openings or separations between adjoining components, that are not consistent with their design and intended operating function, from which fugitive VOC vapors would be emitted to the atmosphere.

~~(7)(8)~~ An operation and maintenance program shall be submitted to the Air Pollution Control Officer for approval for new equipment required by Subsections (d)(4), ~~and (d)(5), (d)(6) and (d)(11)~~. An existing operation and maintenance program that has been approved by the Air Pollution Control Officer need not be resubmitted for approval as a result of amendments to this rule unless such approved operation and maintenance program is revised. Each program shall be implemented and maintained on approval of the Air Pollution Control Officer.

Each operation and maintenance program submitted for approval shall:

(i) Maintain the VOC emission reduction efficiency required under Subsections (d)(4), ~~and (d)(5), (d)(6) and (d)(11)~~; and

(ii) Identify and maintain all key system operating parameters. Key system operating parameters are those parameters, such as temperature, pressure, and/or flow rate, necessary to maintain the VOC emission reduction efficiency required under Subsections (d)(4), ~~and (d)(5), (d)(6) and (d)(11)~~; and

(iii) Include proposed inspection schedules, anticipated ongoing maintenance steps and proposed daily recordkeeping practices regarding the key system operating parameters.

Each program will apply only to the equipment necessary to meet the requirements of Subsections (d)(4), ~~and (d)(5), (d)(6) and (d)(11)~~ and need not include inspection, maintenance or recordkeeping relevant to compliance with Subsection (d)(7).

~~(8)(9)~~ Compliance with Subsections (d)(4), ~~and (d)(5), (d)(6), and (d)(11)~~ shall be determined based upon tests or observations of the process equipment and air pollution control system during a period of at least 16 hours, but not more than 24 hours. Affirmative determination of compliance may be demonstrated through tests or observations for a shorter period of time provided such period of time has been determined appropriate in writing by the Air Pollution Control Officer. Such a shorter test period shall not be the basis for determining non-compliance.

(10) A person shall not operate any kelp processing or bio-polymer manufacturing line or pilot plant facility unless:

(i) Pumps processing VOC-containing material are equipped with dual mechanical seals, or equipped with other leak-free technology that has been approved in writing by the Air Pollution Control Officer and provided that the equipment complies with Subsection (d)(2); and

(ii) Liquid process mixtures containing VOC's are maintained at a temperature not higher than 115°F (46°C) before entering a press; and

(iii) Presses are equipped with sealing door covers .

(11) A person shall not operate any kelp processing or bio-polymer manufacturing line or pilot plant facility unless:

(i) The total uncontrolled emissions of VOC to the atmosphere from presses, and spent pots are captured by an emission collection system and the captured emissions are transported to an air pollution control device; and

(ii) The combined emissions capture and control device efficiency is at least 75% by weight.

#### **(e) RECORDKEEPING**

Any person subject to the requirements of Section (d) of this rule shall maintain the following records:

(1) A current list of VOC's, subject to this rule that are in use, and

(2) For air pollution control equipment, maintain records sufficient to document compliance, such as daily ~~Daily~~ records of process and key system operating parameters and maintenance performed pursuant to Subsections (d)(4), (d)(5), ~~and (d)(7) (d)(6), (d)(8), and (d)(11)~~ which will demonstrate continuous operation and compliance of the emission control device during periods of emission producing activities.

All records shall be retained on site for at least two years, and shall be made available to the District upon request.

#### **(f) VOC TEST METHODS**

(1) The VOC content of fluids subject to Subsections (c)(3)(5) and (d)(2) of this rule shall be determined in accordance with ASTM Standard Recommended Practices for General Gas Chromatography Procedures, E 260-73, General Techniques of Infrared

Quantitative Analysis, E 168-67, or General Techniques of Ultraviolet Quantitative Analysis, E 169-63.

(2) The determination of the normal boiling point of an organic compound pursuant to Subsection (b)(4) shall be conducted in accordance with ASTM Standard Test Method for Distillation Range of Volatile Organic Liquids, D 1078-86 or, for pure compounds, may be made from technical data contained in standard reference texts.

(3) Measurements of VOC emissions subject to Subsections (d)(4), (d)(5), (d)(6), and ~~(d)(8)~~ (d)(11) of this rule shall be conducted in accordance with EPA Test Methods 18 and 25 or 25A (40 CFR, Appendix A) and ~~EPA Guidelines for Developing Capture Efficiency Protocols as they existed on May 21, 1991~~ exist on (date of adoption). Test procedures shall be performed in accordance with a protocol approved by the Air Pollution Control Officer. An alternative method to EPA Test Method 18 and to EPA Guidelines for Developing Capture Efficiency Protocols may be used provided such method has been approved, in advance, by the Air Pollution Control Officer and U.S. Environmental Protection Agency for the specific processes being tested. Subsequent to the initial compliance demonstration period, appropriate parameters as determined by the Air Pollution Control Officer may be used as indicators of the performance of the emission control system.

**(g) COMPLIANCE SCHEDULE**

(1) Any person operating an existing bio-polymer manufacturing line or pilot plant facility which is subject to the provisions of Subsections (d)(6), (d)(10) and/or (d)(11) shall meet the following increments of progress:

(i) By (six months after date of adoption), submit to the Air Pollution Control Officer an application for Authority to Construct and Permit to Operate the equipment specified in Subsections (d)(6), (d)(10) and/or (d)(11).

(ii) By (twelve months after date of adoption), demonstrate compliance with Subsections (d)(6), (d)(10), and/or (d)(11).

(2) Any person operating an existing kelp processing line which is subject to the provisions of Subsections (d)(10) and/or (d)(11) shall meet the following increments of progress:

(i) By (twelve months after date of adoption), submit to the Air Pollution Control Officer an application for Authority to Construct and Permit to Operate the equipment specified in Subsections (d)(10) and/or (d)(11).

(ii) By (eighteen months after date of adoption), demonstrate compliance with Subsection (d)(10).

(iii) By (thirty-six months after date of adoption), demonstrate compliance with Subsection (d)(11).

(3) Any person installing a new kelp processing or bio-polymer manufacturing line or pilot plant facility which is subject to the provisions of Section (d) shall have equipment necessary to comply with the provisions of Section (d) installed and operating upon startup of the line or facility and shall demonstrate compliance within 180 days of startup.

**AIR POLLUTION CONTROL DISTRICT  
SAN DIEGO COUNTY**

**WORKSHOP REPORT**

**RULE 67.10 - KELP PROCESSING AND BIO-POLYMER  
MANUFACTURING OPERATIONS**

A workshop notice was mailed to the one company known to be involved in Kelp Processing and Bio-Polymer Manufacturing Operations in San Diego County. Notices were also mailed to all Economic Development Corporations and Chambers of Commerce in San Diego County, the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and other interested parties.

Workshops were held on November 24, 1992 and August 24, 1993, and were attended by five people. The comments and District responses are as follows:

**1. WORKSHOP COMMENT:**

The exemption for laboratory facilities in Subsection (b)(3) should not specify that these operations must be "used exclusively for research and development" since quality control laboratories are also part of these operations. The word "exclusively" should be deleted.

**DISTRICT RESPONSE:**

The District disagrees. The intent of the rule is to exempt laboratory facilities used solely for research and development. Quality control laboratories are already included in this exemption since "research and development" is defined in Subsection (c)(13) as "operations performed for purposes of testing and quality control".

**2. WORKSHOP COMMENT:**

The exemption for pilot plant facilities should not specify that these operations must be "used exclusively for research and development". The word "exclusively" should be deleted.

**DISTRICT RESPONSE:**

Pilot plant facilities are subject to the revised rule provisions. Therefore, the exemption for pilot plants in Subsection (b)(3) has been deleted.

**3. WORKSHOP COMMENT:**

Subsection (b)(4) should be modified to include engineering calculations as a method of determining a facility's yearly VOC emissions.

**DISTRICT RESPONSE:**

Subsection (b)(4) which specifically addressed pilot plant emissions has been deleted. Since the amended rule provisions apply to pilot plant facilities in a similar manner as to manufacturing lines, the subsection was considered unnecessary.



**4. WORKSHOP COMMENT:**

Subsection (b)(5) should read "...a normal boiling point of 185°C or greater."

**DISTRICT RESPONSE:**

Subsection (b)(5) [which is now (b)(4)] has been modified as suggested.

**5. WORKSHOP COMMENT:**

What is the origin of the "three drops per minute" criteria for the fugitive liquid leak definition in Subsection (c)(5)?

**DISTRICT RESPONSE:**

The liquid leak definition was originally used for refinery operations based on experience in that industry. The criteria was set at three drops per minute as a result of a mutual agreement that this level was adequate to detect a leak. Later it was applied to other industries such as pharmaceutical and synthetic organic chemical manufacturing, and is one of the RACT requirements for fugitive emission controls. The District has this same definition in other VOC source specific rules.

**6. WORKSHOP COMMENT:**

Is there any similarity between the equipment in the pharmaceutical industry or other industry where the three drops per minute criteria for liquid leaks are applicable and the presses in the kelp processing and bio-polymer manufacturing industries?

**DISTRICT RESPONSE:**

Yes. The fugitive liquid leak criteria is applied to other industries within the same Standard Industrial Classification (SIC) code (2833) as Kelco. Batch processes in industries such as pharmaceutical, include batch filtration equipment similar to presses in the kelp processing and bio-polymer manufacturing industries. These other industries have not experienced difficulties in complying with the fugitive liquid leak criteria for the equipment used for slurry filtration.

**7. WORKSHOP COMMENT:**

The existing rule excludes presses from fugitive liquid leak requirements. Will these requirements be extended to presses in the future?

**DISTRICT RESPONSE:**

The proposed rule imposes the fugitive liquid leak requirements on presses. As stated above, similar filtration equipment in other industries within the same SIC category are currently complying with these requirements.

**8. WORKSHOP COMMENT:**

Definition (c)(6) for "fugitive vapor leak" should exclude VOC emissions occurring during material transfer from the incorporators into the presses.



**DISTRICT RESPONSE:**

Definition (c)(6) for "fugitive vapor leak" has been deleted.

**9. WORKSHOP COMMENT:**

Subsection (f)(4) specifies that fugitive vapor leaks will be measured at a distance of 1 cm or less from the source using EPA Test Method 21. The distance criteria for measuring fugitive vapor leaks should be deleted since Test Method 21 does not specify a distance.

**DISTRICT RESPONSE:**

This test method is not needed anymore and has been deleted.

**10. WORKSHOP COMMENT:**

The provisions of Section (d) in the existing rule should be sufficient to address fugitive leaks in pilot plants since Subsection (d)(2) includes provisions for fugitive liquid leaks and timing on repairs.

**DISTRICT RESPONSE:**

The District disagrees. Subsection (d)(10) addresses fugitive leak control and emission reduction measures. These measures are necessary to reach the 81% emission reduction level necessary to comply with federal EPA RACT requirements. Without including these provisions in the rule, the District would have no authority to require that equipment be fitted as specified in proposed Subsection (d)(10). Therefore, the District would be unable to verify that 81% emission reduction is achieved.

**11. WORKSHOP COMMENT:**

Definition (c)(9) for "laboratory" should be revised to specify the scale of equipment used in laboratory facilities.

**DISTRICT RESPONSE:**

The District agrees. Definition (c)(9) has been revised as suggested.

**12. WORKSHOP COMMENT:**

Definition (c)(10) for "pilot plant" should be revised to specify that pilot plant facilities use small-scale or intermediate-scale process equipment for research and development.

**DISTRICT RESPONSE:**

Definition (c)(10) has been revised. However, it does not limit pilot plant operations to research and development only since District experience shows that pilot plants are sometimes used for manufacturing of salable products.

**13. WORKSHOP COMMENT:**

Definition (c)(13) for "Research and Development" should be revised. A suggested definition is "basic research, new product development, process improvement and optimization, production of market evaluation samples (regardless of whether or not a consideration is received therefor), confirming the feasibility of a proposed process, and process scale-up."

**DISTRICT RESPONSE:**

The District disagrees. This proposed definition would be contrary to the rule intent to control operations emitting more than 10 lb per day of VOC's. The District believes that the term "production of market evaluation samples" is very general and subject to future misinterpretation because such production may result in significant VOC emissions.

**14. WORKSHOP COMMENT:**

Definition (c)(14) for "Spent Pot" should be modified to specify that VOC-containing liquid is collected in spent pots immediately after being discharged.

**DISTRICT RESPONSE:**

The definition for spent pot has been revised to reflect this.

**15. WORKSHOP COMMENT:**

Definition (c)(15) for "Stationary Source" refers to the definition in Rule 20.1 which in turn has a reference to offshore operations. This reference should be deleted.

**DISTRICT RESPONSE:**

Offshore operations in Rule 20.1 refer to offshore oil platforms. However, any VOC-emitting operations within the California Coastal Waters would be subject to regulation. This should have no effect on operations subject to Rule 67.10.

**16. WORKSHOP COMMENT:**

There are no reactors at the pilot plants. Therefore, reactors should not be included in the language of Subsection (d)(6).

**DISTRICT RESPONSE:**

The District originally included reactors in this provision to allow for the possibility of future pilot plants that may include reactors. It was stated during the workshop that pilot plants are expected to be used exclusively for research and development of bio-polymer operations which do not use reactors. Therefore, Subsection (d)(6) has been modified to exclude reactors.

**17. WORKSHOP COMMENT:**

The words "after filling and prior to discharge" should be added at the end of the paragraph in Subsection (d)(6).

**DISTRICT RESPONSE:**

Subsection (d)(6) has been revised accordingly.

**18. WORKSHOP COMMENT:**

The vapor exit temperature from the vent condensers specified in Subsection (d)(10)(iii) should be 110°F instead of 80°F.

**DISTRICT RESPONSE:**

The requirement for spent pot vent condensers in Subsection (d)(10)(iii) has been deleted.

**19. WORKSHOP COMMENT:**

Subsection (d)(10)(ii) should read "...immediately before entering a press."

**DISTRICT RESPONSE:**

The District disagrees. Subsection (d)(10)(ii) requires that the liquid process mixtures (slurry) be maintained at a temperature less than 115°F so as to reduce evaporative losses. The slurry is cooled and then travels to the press. Since there is no further cooling before the press, the same temperature requirement can be applied throughout the lines transferring slurry to the press.

**20. ARB COMMENT:**

The definition for "Research and Development" in Subsection (c)(13) should specify that the products from such operations are not to be delivered and/or sold.

**DISTRICT RESPONSE:**

The District agrees and has revised the definition to address this concern.

**21. EPA COMMENT:**

The source subject to Rule 67.10 is a major source of VOC emissions and must meet RACT requirements. RACT for a non-CTG source is defined as a level of control which achieves an overall reduction in uncontrolled VOC emissions of at least 81% by weight.

**DISTRICT RESPONSE:**

The proposed Rule 67.10 meets RACT requirements. The District believes that the level of control reflected in the proposed rule achieves an overall reduction in uncontrolled VOC emissions of at least 81% by weight. See supporting documentation in the Socioeconomic Impact Analysis.

**SOCIOECONOMIC IMPACT ASSESSMENT**

**PROPOSED AMENDED RULE 67.10 -  
KELP PROCESSING AND BIO-POLYMER  
MANUFACTURING OPERATIONS**

**San Diego County  
Air Pollution Control District**

**April 1994**

## **SOCIOECONOMIC IMPACT ASSESSMENT**

### **PROPOSED AMENDED RULE 67.10 - KELP PROCESSING & BIO-POLYMER MANUFACTURING OPERATIONS**

#### **INTRODUCTION**

Section 40728.5 of the State Health & Safety Code requires the Air Pollution Control District (District) to perform a socioeconomic impact assessment for any new or amended rules that will significantly affect air quality or emission limitations. This report contains the District's assessment of the socioeconomic impacts of amended District Rule 67.10 - Kelp Processing and Bio-Polymer Manufacturing Operations.

Rule 67.10 regulates the volatile organic compound (VOC) emissions from kelp processing and bio-polymer manufacturing operations. It was initially adopted in 1985 and became part of the State Implementation Plan (SIP) in 1987. The rule was further amended in 1991 to correct deficiencies identified by the Environmental Protection Agency (EPA).

Kelco, a division of Merck & Co., is the only facility in San Diego County subject to this rule. This facility, together with another Kelco plant in Okmulgee, Oklahoma, is the world's largest manufacturer of specialized products (alginates and biogums) that are used as ingredients in food, dairy, pharmaceutical, and industrial products, as well as processing aids in textile and paper manufacturing and oil field operations. Alginates are made from kelp (a type of seaweed) while biogums are produced from corn syrup (bio-polymer). Both products are manufactured by a combination of chemical technology using inorganic and organic materials, and biotechnology which uses fermentation processes induced by microorganisms.

Rule 67.10 requires control of VOC emissions from both kelp processing and bio-polymer manufacturing operations through a combination of add-on control technology, fugitive emissions control and proper housekeeping procedures. Process lines emitting less than 15 lbs per day of VOC's, and laboratory and pilot plant facilities used exclusively for research and development, are exempt from the rule provided that proper records are kept to verify the exemption eligibility.

The kelp processing and bio-polymer manufacturing facility in San Diego County is the largest single source of VOC emissions in the county. According to the 1991 emission inventory, it emits approximately 2600 tons of volatile organic compounds, mostly isopropyl alcohol (IPA) and propylene oxide (PO). These emissions represent approximately 36% of the total VOC emissions from all permitted stationary sources in the county.

The Federal Clean Air Act (FCAA) requires that VOC emissions from all major sources in ozone non-attainment areas be reduced by applying reasonably available control technology (RACT). RACT is defined as the level of emission control that has been demonstrated and is technologically and economically feasible for a given source. During the last two decades the EPA has published a number of Control Technique Guideline Documents (CTG's) which identify RACT level control technology for specific operations and industries such as coating operations, pharmaceutical manufacturing, chemical manufacturing, etc. EPA has also determined that for industries or operations not covered under existing or future CTG's, RACT is an overall reduction in uncontrolled emissions of at least 81%. This would include kelp processing and biogum manufacturing. The overall control efficiency required by the current rule is approximately 55%.

The proposed amendments to Rule 67.10 will achieve the level of emission control mandated by the Federal Clean Air Act. The amended rule will require the installation of air pollution control systems to reduce fugitive VOC emissions from kelp processing and bio-polymer manufacturing lines. Fugitive liquid leaks from the kelp processing and bio-polymer manufacturing lines in the main production plants will be further reduced through strengthening of the definition of fugitive

liquid leaks to reflect RACT and by specifying equipment and process parameters to minimize such leaks.

In addition, the District has recently determined that the two pilot plants at the facility are a major source of VOC emissions and must also be controlled to RACT levels. The proposed amendments will control VOC emissions in the pilot plants.

Specifically, amended Rule 67.10 will require implementation of the following control strategies to reduce VOC emissions from kelp processing and bio-polymer manufacturing lines, and pilot plant facilities:

- Install specified equipment, or modify process parameters to minimize fugitive leaks.
- Install air pollution control systems to capture and reduce fugitive VOC emissions from specified equipment by at least 75% by weight.
- Install air pollution control systems in the pilot plant facilities to capture and reduce VOC emissions by 95% by weight.
- Require covers on all in-process tanks for material containing VOC when not in use in the pilot plant facilities.
- Include pilot plant facilities in the requirement to implement an Operation and Maintenance program for air pollution control equipment.

The proposed amendments to Rule 67.10 are expected to reduce annual VOC emissions from the production and pilot plants by approximately 1590 tons per year (more than 4.5 tons per day). The overall cost effectiveness of each of the various requirements in the proposed amendments is estimated to be between \$0.10 and \$1.32 per pound of VOC reduced.

### **THE NECESSITY OF AMENDING RULE 67.10**

The Federal Clean Air Act requires that all major sources of VOC emissions in severe ozone non-attainment areas (i.e. sources emitting more than 25 tons per year of VOC) apply a level of control which reflects reasonably available control technology (RACT). EPA has determined that RACT for major VOC sources for which EPA has not published control technique guidance is an overall reduction in uncontrolled emissions of at least 81% by weight. Existing Rule 67.10 provides approximately a 55% overall emission reduction from uncontrolled levels. Therefore, the rule must be revised to comply with the FCAA requirement for RACT (i.e., 81%).

The current rule also contains an exemption for laboratory and pilot plant facilities used exclusively for research and development. The two pilot plants, by themselves, constitute a major source of VOC emissions and therefore are subject to the RACT requirements of FCAA. The proposed amendments to Rule 67.10 meet these requirements.

### **IMPACT ASSESSMENT**

Effective January 1, 1992, state law requires that whenever the District proposes adoption, amendment or repeal of a rule or regulation significantly affecting air quality or emission limitations, a socioeconomic impact assessment must be prepared, to the extent that data are available. The

Health and Safety Code specifies the following elements to be included in the socioeconomic impact assessment:

- (1) The type of industries or business, including small business, affected by the rule or regulation.
- (2) The range of probable costs, including costs to industry or business, including small business, of the rule or regulation.
- (3) The impact of the rule or regulation on employment and the economy of the region affected by the adoption of the rule or regulation.
- (4) The availability and cost-effectiveness of alternatives to the rule or regulation being proposed or amended.
- (5) The emission reduction potential of the rule or regulation.
- (6) The necessity of adoption, amending, or repealing the rule or regulation in order to attain state and federal ambient air standards.

Item 6 is discussed in the preceding section. The remaining items are discussed below.

#### **Type of Industries Affected by Amended Rule 67.10**

Amended Rule 67.10 will directly affect only one large company in San Diego County - Kelco Division of Merck & Co., Inc. (SIC 2833).

The proposed amendments to Rule 67.10 may also indirectly affect Kelco's customers in a variety of industries, such as food, dairy and pharmaceuticals, which use Kelco alginates and biogums as ingredients in their products or processes. The anticipated cost impacts on Kelco and its business customers are discussed later in this report.

#### **Economic Impacts and Range of Probable Costs**

Compliance with the amendments to Rule 67.10 will result in additional costs to the affected facility from the purchase, operation and maintenance of add-on control equipment and fugitive emissions controls. Costs anticipated as a result of Rule 67.10 implementation were developed using data provided by Kelco.<sup>1</sup> Tables 1 and 2 summarize the overall cost of compliance, and Tables 3 and 4 summarize the overall cost-effectiveness associated with various control strategies. The data are combined for pilot plants and bio-polymer manufacturing (Plant C). Data for the kelp processing plant (Plant B) are listed separately.

##### **(a) Add-on Control Equipment**

The amendments to Rule 67.10 will require control equipment to be installed at pilot plants to reduce VOC emissions of IPA from dryers by at least 95% by weight. The proven technology for this purpose is liquid absorption (water scrubbers). This technology is currently being used in the main production plants. The initial capital cost and the annual operating cost for a water scrubber at

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<sup>1</sup> Correspondence from Kelco, December 17, 1993 through March 9, 1994.

the pilot plants are estimated to be \$1,350,000 and \$135,000, respectively. This corresponds to a total annualized cost of approximately \$356,400 per year.

(b) Spent Pot Controls

Spent pots are used to collect VOC-containing liquid for subsequent transfer. Fugitive liquid and gaseous emissions from spent pots are common due to evaporation and overspill. Measures to avoid fugitive liquid leaks from spent pots include installation of sealed lids and a level control to prevent overspill. These strategies are expected to decrease emissions from spent pots by approximately 25%.

The estimated annualized costs, including operating costs, of this requirement, are \$5,230 for the pilot plants; \$34,660 for Plant C; and \$70,510 for Plant B.

(c) Cooling of Liquid Process Mixtures (Slurries)

Rule 67.10 will require that liquid process mixtures (slurries) be maintained at a temperature less than 115°F. The slurry in the pilot plants is currently maintained at a temperature of 125°F. This process modification was implemented in one of the production plants (Plant C) before the rule revisions were proposed. By installing process coolers in the pilot plants, fugitive vapor emissions will be reduced approximately 20%.

The estimated total annualized cost of this strategy is \$56,000 for the pilot plants. The annualized cost for Plant C, where it is already in effect, is \$76,400.

(d) Press Doors

Rule 67.10 will require that the presses in the pilot plants and both production plants (Plants B and C) be equipped with sealed doors. This measure is estimated to reduce emissions by approximately 25%. The total annualized cost is expected to be approximately \$20,300 for the pilot plants, \$65,640 for Plant C, and \$133,560 for Plant B.

(e) Fugitive Emission Collection System (Vapor Fume Barrier)

The amendments to Rule 67.10 will require that uncontrolled VOC emissions from spent pots and presses be captured by an emission collection system. The collected emissions must be transported to an air pollution control device and can be directed to already existing water scrubbers or, in the case of the pilot plants, to the same water scrubber that will be installed for purposes of controlling emissions from the dryer. The annualized costs for this measure are estimated to be \$24,200 for the pilot plants, \$86,220 for Plant C, and \$175,430 for Plant B.

(f) Fugitive Liquid Leaks

The proposed revisions to Rule 67.10 will prohibit fugitive liquid leaks from pumps, valves, piping, and ducting associated with the emission control system, with material transfer, and with solvent transport in the pilot plant facilities. This requirement is already in place for the main production plants, but the amended rule will apply a more stringent definition of a liquid leak, reflecting RACT.

The amended rule will also require the installation of dual mechanical seals (or equivalent control) on centrifugal pumps that process solvent-laden liquids. These measures will reduce emissions by 37%. The primary cost associated with compliance will be replacement of the pump seals (in some cases the entire pump may be replaced). The annualized cost is estimated to be



\$11,580 for the pilot plants, \$6,100 for Plant C, and \$8,750 for Plant B. These costs include initial repairs necessary to have equipment comply with the fugitive leak standard.

(g) Fugitive Leaks Monitoring

The current requirements for kelp processing and bio-polymer manufacturing lines to be free of fugitive liquid leaks (include a monitoring and repair program) will be extended to the pilot plants. Although the rule does not stipulate a monitoring schedule, it prohibits fugitive liquid leaks and provides a limited time to repair them. Therefore, regular monitoring of the system is essential to comply with these requirements. Based on an estimate of the number of hours necessary for monitoring and a labor cost of \$30/hour (including overhead), the annual cost is estimated to be \$1,600 for the pilot plants, and \$18,700 for both Plants B and C combined.

(h) Leak Reporting/Repair

Rule 67.10 currently requires that any fugitive liquid leaks at kelp processing or bio-polymer manufacturing lines be recorded and promptly repaired. The proposed amendments will also impose this requirement on the pilot plants and extend it to liquid leaks previously not covered by the rule. Reduction of VOC emissions associated with these requirements is difficult to quantify. Annual cost to comply with these requirements based on an estimate of the number of hours necessary for repairs is expected to be \$3,450 for the pilot plants, and \$39,000 for both Plants B and C combined.

(i) Recordkeeping

Current Rule 67.10 requires that daily records be kept of key system operating parameters and of maintenance performed for kelp processing or bio-polymer manufacturing lines. Revisions to Rule 67.10 will extend this requirement to pilot plants. Although these requirements are necessary to improve the enforceability of the rule, they will not directly result in any VOC emissions reduction. However, since these requirements are already being met for the production plant emission controls, the additional costs associated with recordkeeping in pilot plants are considered negligible.

(j) Operation and Maintenance Program

The amendments to Rule 67.10 will extend the operation and maintenance program requirement to pilot plant air pollution control equipment. This requirement does not result in any direct VOC emissions reduction, but does cause an additional cost. When air pollution control equipment is initially installed or replaced, there will be a cost associated with developing the O & M program. This cost will likely not exceed \$2,000.

**Table 1. Overall Cost of Compliance for the Proposed Control Strategies of Amended Rule 67.10 for Pilot Plants and Plant C**

<b>VOC Control Strategy</b>	<b>Capital Cost</b>	<b>O &amp; M Cost (per year)</b>	<b>Annualized Total Cost</b>	<b>VOC Emission Reduction, percent*</b>
Add-on Control	\$1,350,000	\$135,000	\$356,400	95
Spent Pot Controls	\$151,080	\$15,100	\$39,900	25
Slurry Coolers	\$501,450	\$50,150	\$132,400	20
Press Controls	\$325,550	\$32,560	\$85,950	25
Vapor Fume Barrier	\$418,400	\$41,800	\$110,400	75
Piping, Valves, Pumps	\$107,865	N/A	\$17,700	37
Monitoring	N/A	\$10,920	\$10,920	N/A
Repair	N/A	\$22,940	\$22,940	N/A
<b>OVERALL</b>	<b>\$2,854,300</b>	<b>\$308,500</b>	<b>\$776,600</b>	<b>N/A</b>

\* Calculated using 1991 baseline emission inventory.

**Table 2. Overall Cost of Compliance for the Proposed Control Strategies of Amended Rule 67.10 for Plant B**

<b>VOC Control Strategy</b>	<b>Capital Cost</b>	<b>O &amp; M Cost (per year)</b>	<b>Annualize Total Cost</b>	<b>VOC Emission Reduction, percent*</b>
Spent Pot Controls	\$267,100	\$26,710	\$70,510	25
Press Controls	\$505,900	\$50,590	\$133,560	25
Vapor Fume Barrier	\$664,500	\$66,450	\$175,430	75
Piping, Valves, Pumps	\$53,325	N/A	\$8,750	37
Monitoring	N/A	\$9,360	\$9,360	N/A
Repair	N/A	\$19,490	\$19,490	N/A
<b>OVERALL</b>	<b>\$1,490,800</b>	<b>\$172,600</b>	<b>\$417,100</b>	<b>N/A</b>

\* Calculated using 1991 baseline emission inventory.

**Table 3: VOC Emission Reductions & Cost Effectiveness of Proposed VOC Control Measures for Pilot Plants and Plant C**

<b>VOC Control Strategy</b>	<b>Annualized Total Cost</b>	<b>Emission Reductions (tons/year)</b>	<b>Cost-Effectiveness (\$/ton VOC reduced) (\$/lb)</b>
Add-on Control (Pilot Plant Water Scrubber)	\$356,400	30*	not determined
Spent Pot Controls	\$39,900	56	\$710 (\$0.36)
Slurry Coolers	\$132,400	290	\$460 (\$0.23)
Press Controls	\$85,950	205	\$420 (\$0.21)
Vapor Fume Barrier	\$110,400	588	\$190 (\$0.10)
Piping, Valves, Pumps	\$51,560	31	\$1,640 (\$0.82)
<b>OVERALL</b>	<b>\$776,600</b>	<b>1201</b>	<b>N/A</b>

\* This number is tentative pending the clarification of issues relating to the pilot plants emissions inventory. For the same reason, the cost-effectiveness has not been determined.

**Table 4: VOC Emission Reductions & Cost Effectiveness of Proposed VOC Control Measures for Plant B**

<b>VOC Control Strategy</b>	<b>Annualized Total Cost</b>	<b>Emission Reductions (tons/year)</b>	<b>Cost Effectiveness (\$/ton VOC reduced) (\$/lb)</b>
Spent Pot Controls	\$70,510	27	\$2,630 (\$1.32)
Press Controls	\$133,560	84	\$1,600 (\$0.80)
Vapor Fume Barrier	\$175,430	248	\$710 (\$0.36)
Piping, Valves, Pumps	\$37,600	30	\$1,260 (\$0.63)
<b>OVERALL</b>	<b>\$417,100</b>	<b>389</b>	<b>N/A</b>

The full implementation of amended Rule 67.10 will result in an overall VOC emission reduction of approximately 1590 tons per year, or 60% of the emissions in 1991 and 82% of the original uncontrolled emission level. The estimated cost effectiveness of each of the various requirements in the Rule 67.10 amendments is from \$190 to \$2,630 per ton of VOC's reduced (\$0.10 to \$1.32 per lb).

Implementation of the proposed amendments is expected to achieve a greater emission reduction (more than 4.5 tons per day) than any other VOC control measure adopted by the District in the past 10 years. In addition, the cost effectiveness of Rule 67.10 amendments is significantly lower than the cost effectiveness associated with other VOC control measures adopted by the District, or included in the San Diego Regional Air Quality Strategy.

As a result of Rule 67.10 amendments, Kelco is expected to incur a capital expenditure of approximately \$4.3 million and annual operating costs of \$480,000. This equates to a total annualized cost of approximately \$1.2 million. While the overall costs of the rule compliance represent significant capital and annual expenses for Kelco, it is estimated that the increase in the cost of its products will be marginal, a maximum of 2% depending on the specific product.<sup>2</sup>

It should be noted that the financial impact estimates may be conservatively high. The suggested control strategies reducing fugitive emissions of isopropyl alcohol (IPA), which is one of the major components in kelp processing and bio-polymer manufacturing processes, will also result in significant savings of IPA usage and consequent reduction in the cost of alginates and biogums production. These savings were not taken into account when calculating costs of compliance with Rule 67.10 amendments because of the present uncertainties associated with the estimates of fugitive emissions controlled. The District is continuing to work closely with Kelco personnel to derive a better methodology and emission factors for estimating VOC emissions and emission reduction from Kelco facilities.

In general, a company confronted with the increased cost of doing business due to environmental regulations has several choices to alleviate this problem. It can absorb the cost, pass it on to its customers, or relocate the business to another region which has less strict environmental laws.

Considering that the expenses associated with the amended rule will result in a marginal increase in the cost of Kelco products, it is expected that the cost of compliance with amended Rule 67.10 will likely be passed on to the company's worldwide customers and ultimately to the consumer. Biogums and alginates are used in only small portions as ingredients in food or other products. Given this and the worldwide extent of the market, this increase in price of Kelco products would not likely have a significant effect on either its business customers or individual consumers.

### **Employment Impacts**

It is not likely that the proposed amendments will result in any local workforce reduction. However, since the implementation of the proposed rule will require the use of add-on emission control devices, fugitive emission controls and equipment modernization, it may result in some employment increase in economic sectors associated with air pollution control equipment and related technologies either within or outside of San Diego County.

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<sup>2</sup>Prices obtained from telephone conversation with sales representative, Lori Goodman, on August 17, 1993.

### **Availability and Cost-Effectiveness of Alternatives**

There are three basic alternatives to Rule 67.10: not to amend the rule, propose a less stringent rule, or propose a more stringent rule.

The first and second alternatives are not viable options because they are inconsistent with the Federal Clean Air Act of 1990 which requires all regions that do not meet the ozone standard to adopt rules reflecting RACT for major sources of VOC emissions. On January 15, 1993, EPA notified the District of a finding of failure to submit RACT rules for several major sources of VOC emissions. EPA stated that this would result in imposition of federal sanctions, such as withholding of up to \$75 million in federal highway funds to the region and severe restrictions on industrial expansion (2.0 to 1.0 emission offset ratio), unless the required rules are adopted and submitted to EPA within 18 months of the finding, i.e. by July 15, 1994. Failure to adopt RACT rules within two years of such finding would also result in promulgation of a Federal Implementation Plan for San Diego County.

The District has determined that the proposed amendments to Rule 67.10 reflect RACT, which is technically feasible and economically reasonable. Amended Rule 67.10 will provide a minimum 81% VOC emission reduction from the initial uncontrolled emission levels at the affected facility.

The first and second alternatives would also be inconsistent with the California Clean Air Act of 1988 which requires the District to adopt all feasible control strategies to reduce emissions of volatile organic compounds. Therefore, amendments to Rule 67.10 should be adopted as expeditiously as possible to fulfill the requirements of the Federal and State Acts.

The third alternative is to adopt a more stringent rule. The rule could be made more stringent than proposed amended Rule 67.10 by applying fugitive vapor leak standards to equipment in the facility or by imposing the fugitive emission requirements on manual transfer of product. However, these measures would likely result in minimal additional emission reductions and could result in substantially increased costs. This alternative is not recommended.

### **Emission Reduction Potential**

As shown in Tables 3 and 4, implementation of amended Rule 67.10 is expected to reduce annual VOC emissions from the facility, including fugitive emissions, by approximately 1590 tons per year. This represents approximately 50% of VOC emissions from all stationary sources in the air basin.

### **Minimization of Adverse Socioeconomic Impacts**

The District has worked closely with Kelco, a division of Merck & Co. to minimize economic impacts which may result from Rule 67.10 to the extent allowed by state and federal requirements. Company representatives were consulted during the rule development process in two formal workshops, numerous additional meetings, and other written and telephone contacts. This effort resulted in changes to the initially proposed rule. The compliance schedule was revised to provide additional time for installation of add-on air pollution control systems in kelp processing operations. Rule exemptions were included for use of temporary equipment in pilot plant facilities. Process parameters and equipment modifications were revised to provide Kelco flexibility to minimize economic impacts while achieving equivalent emission reductions. Definitions were added and the rule clarified to provide for easier compliance.

## CONCLUSIONS

Based on the above analysis, amended Rule 67.10 is expected to have minimal impacts on employment and the economy in San Diego County and will not have a significant adverse effect on Kelco operations.

At the same time, the amount of VOC emissions reduced (more than 4 tons per day) is significant and will provide tangible benefits to air quality in the County and will contribute to the attainment of federal and state ambient air quality standards for ozone.