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## Chlorine/Post-Harvest Commodity Treatment

### Pesticide use reporting

**Date established**

February 20, 2001

**Enforcement Letter**

ENF 01-08

**Distribution**

County Agricultural Commissioners

**Referrals**

If you have any questions pertaining to this document, please contact your Senior Pesticide Use Specialist liaison.

**Approval**

*Original Signed By*

Roy Rutz, Acting Chief  
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**Issue**

California's pesticide use reporting regulations as they pertain to the use of nonrestricted chlorinating products for antimicrobial post-harvest commodity treatment.

**Problem**

Regulating the industry's record keeping and reporting requirements for the use of chlorinating products as post-harvest commodity treatments has been a major challenge for the county agricultural commissioners (CACs).

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## Pesticide use reporting, Continued

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**Policy** Since residues of chlorinating compounds remaining on food from industrial use on food, food-contact surfaces, and equipment are considered to pose *no hazard* to human health by U.S. Environmental Protection Agency (U.S. EPA) and the Food and Drug Administration (FDA), the Department of Pesticide Regulation (DPR) sees little or no benefit in collecting data for antimicrobial uses of chlorinating compounds in this use setting for dietary risk assessment. DPR presumes that use of antimicrobial chlorinating products in packinghouses to be for other industrial uses of general pathogen reduction, than post-harvest commodity treatment, unless the use pattern clearly indicates otherwise. Pesticide use reporting and record keeping requirements of Title 3, California Code of Regulations (CCR) sections 6622, 6624, and 6627 would not normally apply to this use of chlorine products.

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**Post-harvest commodity treatment** In 1990, the implementation of California's full use reporting regulations required any person who used a pesticide for industrial post-harvest commodity treatment to maintain records, and to report a summary of the monthly use to the CAC. The regulations also required the CAC to issue an operator identification number to the facility operators.<sup>1</sup> DPR determined that the use of chlorinating products directly for commodity rinsing, dip tank, or fruit and vegetable wash is a post-harvest commodity treatment.<sup>2</sup>

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**Determining use** It has been up to the individual inspector to determine how chlorine is being used in a food processing facility or packing house. Inspections at these facilities are often confusing, and can be extremely difficult to determine whether chlorine is being used for slime control in flume water, water treatment to ensure water quality is adequate, or for commodity treatment. There are no definitive indicators (e.g., the amount of chlorinating product being used) to help with the determination. Often the inspector must rely on the plant manager or quality control technician's explanation of the intent for using the chlorinating product in a plant. Most facilities use chlorine on commodities as well as on food-contact surfaces and equipment.

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<sup>1</sup> Title 3, California Code of Regulations, sections 6622, 6624, and 6627.

<sup>2</sup> PRB # 93-38, July 9, 1993 Letter to Food Processors and all county agricultural commissioners.

## Pesticide use reporting, Continued

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**Determining use (continued)** According to the *Guidance for Industry Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables* issued by the United States Department of Agriculture (USDA) and the FDA in October 1998, “Whenever water comes into contact with fresh produce, its quality dictates the potential for pathogen contamination. .... Although water (by itself) is a useful tool for reducing potential contamination, it may also serve as a source of contamination or cross contamination.... Prevention of contamination is preferred over corrective actions once contamination has occurred. However, antimicrobial chemicals in processing water are useful in reducing microbial build-up in water....”

Dr. Devon Zagory, product consultant from Davis, California, stated at the 11<sup>th</sup> Annual Conference of the International Fresh-Cut Produce Association, “The real function of wash water sanitation systems is to keep the water clean so it does not become a source of continuing contamination for the product that passes through it. The true focus of our system should be to ensure that pathogens introduced into the water are rapidly killed.”<sup>3</sup> Based on this information, it is reasonable to assume that the plant is using chlorinating products for water treatment, to ensure water quality is adequate, or for preventing general pathogen build-up, and not to kill microbes on the produce.

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**Antimicrobial regulation** Antimicrobial use by food processors and packing houses in California is highly regulated by the FDA, the California Department of Health Services, Food and Drug Branch, and the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal-OSHA). There is some overlap in the jurisdiction and responsibilities of these agencies, the CACs, and DPR.

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**Regulatory equivalency** The overlap was recognized by DPR in 1994 when a policy was implemented and guidelines developed to clarify regulatory and enforcement activities by Cal-OSHA and CACs in settings involving sanitizers and disinfectants.<sup>4</sup> As a result, regulations were adopted in 1995, which recognized specific sections of the Cal-OSHA regulations as meeting the requirements of DPR worker safety regulations.<sup>5</sup>

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<sup>3</sup> *Sanitation: Keeping Wash Water Clean*, Fresh Cut, May 1998.

<sup>4</sup> ENF Letter 94-16, April 19, 1994, Investigations of Antimicrobial Pesticides.

<sup>5</sup> 3 CCR section 6720.

## Pesticide use reporting, Continued

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**Antimicrobial exemptions** DPR considers the use of antimicrobial pesticides as a separate category from other pesticide uses in many situations. There are separate procedures for investigating human effect episodes involving antimicrobials, and separate enforcement guidelines.<sup>6</sup> In addition, 3 CCR section 6686(d) specifically exempts sanitizers, disinfectants, and medical sterilants from pesticide storage, transportation, and disposal regulations.

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**Additional jurisdictional complexity** In 1996, as a result of the Food Quality Protection Act (FQPA), both the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug, and Cosmetics Act (FFDCA) were amended. Some of the changes had a significant impact on the regulatory authority for many antimicrobial products that are used in food processing and food-contact applications. In an attempt to correct an unintentional transfer of regulatory authority by FQPA, the Antimicrobial Regulation Technical Corrections Act of 1998 (ARTCA)<sup>7</sup> was passed. According to U.S. EPA and the FDA's current thinking<sup>8</sup>, commodities that have been chopped, sliced, cut, or peeled are considered to be "processed foods." The regulation of antimicrobials used in or on processed food is under FFDCA section 409, as food additives, except ethylene dioxide and propylene oxide. At the same time, antimicrobials used on permanent or semi-permanent food-contact surfaces at all sites (including food-processing facilities) are under the jurisdiction of U.S. EPA.

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**Pesticide use reporting** According to the Initial Statement of Reasons For Proposed Changes in the Regulations of the California Department of Food and Agriculture Pertaining to Pesticide Use Reporting<sup>9</sup>, the criteria used to determine the reporting requirement for pesticides used as industrial post-harvest commodity treatments involved the issue of food safety (estimating dietary exposure to pesticide residues) and incomplete pesticide use data for pesticides used on fruits and vegetables.

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<sup>6</sup> "Pesticide Episode Investigation Procedures Manual", January 1999, Pesticide Enforcement Branch and Worker Health & Safety Branch.

<sup>7</sup> US Public Law 105-324, adopted October 30, 1998.

<sup>8</sup> "Antimicrobial Food Additives – Guidance", FDA Center for Food Safety and Applied Nutrition, July 1999.

<sup>9</sup> ENF Letter 89-114, September 11, 1989, 100% Pesticide Use Reporting Regulations.

## Pesticide use reporting, Continued

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**Food safety** In September 1991, the U.S. EPA issued a Registration Eligibility Document (R.E.D.) for sodium and calcium hypochlorite salts<sup>10</sup>. In the R.E.D. Fact Sheet under “Dietary Exposure,” it states, “Residues of sodium and calcium hypochlorite may remain on certain food crops as a result of their disinfectant uses. However, these residues pose no known hazard to human health.... (Sodium hypochlorite is among those few substances ‘generally recognized as safe,’ or GRAS. Please see 40 CFR 180.2.)”

Under “Human Risk Assessment,” it states, “Based on the toxicity profile and exposure scenarios for calcium and sodium hypochlorite, EPA concludes that the risks from chronic and subchronic exposure to low levels of these pesticides are minimal and without consequence of human health.”

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**Tolerance exemptions** Both chlorine gas and calcium hypochlorite are exempt from a tolerance.<sup>11</sup> Sodium hypochlorite may be safely used in washing and lye peeling of fruits and vegetables with no limitation on the parts per million allowed (a direct food additive).<sup>12</sup> Chlorine dioxide may be used as an antimicrobial agent in water to wash fruits and vegetables that are now raw agricultural commodities in an amount not to exceed 3 parts per million (ppm) residual chlorine dioxide (a secondary direct food additive).<sup>13</sup> Aqueous solutions containing potassium, sodium, or calcium hypochlorite may be safely used as a final sanitizing rinse on food processing equipment and utensils, and on other food-contact articles (indirect food additive).<sup>14</sup>

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**Related chlorine gas issues** U.S. EPA is considering the reclassification of chlorine gas as a restricted use pesticide (RUP) due to the fact that use of chlorine gas in food processing plants, public/commercial swimming pools, pulp/paper mills, and cooling towers poses a significant risk to applicators, other workers, and bystanders from the gas itself, and not from consuming food or water treated with chlorine.

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<sup>10</sup> EPA R.E.D. Facts, “Sodium and Calcium Hypochlorite Salts”, pages 2-3, September 1991, # 738-91-108.

<sup>11</sup> Title 40, Code of Federal Regulations (40 CFR), sections 180.1095 and 180.1054.

<sup>12</sup> Title 21, Code of Federal Regulations (21 CFR), section 173.315(a)(2).

<sup>13</sup> 21 CFR 173.300.

<sup>14</sup> 21 CFR 178.1010.

## Pesticide use reporting, Continued

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**Related  
chlorine gas  
issues  
(continued)**

If this occurs and as new RUP labeling is seen in the channels of trade, persons using or supervising the use of chlorine gas in food processing plants will have to be certified (possess a DPR-issued Qualified Applicator Certificate). Although a California restricted materials permit will not be required, the operator of the property will have to keep Pesticide Use Records and file Monthly Summary Pesticide Use Reports on RUP-labeled gas, pursuant to 3 CCR sections 6624 and 6627. In addition, persons who sell the RUP-labeled gas in California will need a Pesticide Dealer's License.

All **chlorine gas** uses discussed in this document are still "pesticide use" and must be a registered product and its labeling must be followed. Any applicable worker safety regulations must be followed.

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cc: Mr. Daniel J. Merkley, Agricultural Commissioner Liaison