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Via electronic and U.S. mail

Dr. Tobi Jones, Assistant Director
Division of Registration and Health Evaluation
California Department of Pesticide Regulation
P.O. Box 4105
Sacramento, CA 95812-4015

Dear Dr. Jones:

Request to Require Registration of Permethrin-Impregnated Clothing

The purpose of this letter is request that the California Department of Pesticide Regulation (DPR) require the registration of permethrin-impregnated clothing. Tri-TAC is concerned that the use of permethrin-impregnated clothing in California may cause adverse water quality impacts. As background, Tri-TAC is a technical advisory group comprised of public and private wastewater professionals focusing on regulatory issues of interest to Publicly Owned Treatment Works (POTWs) in California. Tri-TAC is jointly sponsored by the California Association of Sanitation Agencies, the California Water Environment Association, and the League of California Cities. The constituency base for Tri-TAC collects, treats, and reclaims more than two billion gallons of wastewater each day and serves most of the sewered population of California.

On July 7, 2003, the United States Environmental Protection Agency (EPA) issued a conditional registration for Buzz Off Insect Shield Apparel (EPA Registration No. 74843-2). Buzz Off Insect Shield Apparel is clothing that has been treated with permethrin to repel mosquitoes, ticks, ants, flies, chiggers, and midges. On October 16, 2002 DPR received an application from Buzz Off Insect Shield LLC to register their apparel for use in California. On November 21, 2003, DPR sent a letter to Buzz Off Insect Shield LLC stating, "We have decided not to regulate clothing as a pesticide, at this time." No justification was given in the letter by DPR for its decision not to register clothing as a pesticide.

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(Nevertheless, the manufacturer appears to claim on its web site that Buzz Off Insect Shield Apparel is registered in California.¹)

Tri-TAC recommends that DPR reconsider this decision and require the registration of permethrin-impregnated clothing. Permethrin is extremely toxic to aquatic organisms. The California Department of Fish and Game (DFG) aquatic toxicity thresholds for permethrin are 0.03 parts per billion for fresh water and 0.001 parts per billion for salt water.² These thresholds were developed by DFG under contract to DPR, to aid in assessing the impact of pesticide use on aquatic organisms.

Normal use of permethrin-impregnated garments includes home laundering of the garments with water. The manufacturer of Buzz Off apparel recommends that “[t]he garments ... be machine-washed separately using standard laundry detergent.”³ The EPA label for the garments indicates that they are not to be dry cleaned, as the dry cleaning process removes the permethrin. Wastewater from laundering is sent to sewers, where it travels to downstream POTWs.

The degree of removal of permethrin at POTWs has not yet been assessed. However, the EPA’s National Risk Management Research Laboratory maintains a Treatability Database that includes information on the removal of various pollutants during different types of treatment.⁴ This database contains information on the removal of permethrin in the pretreatment systems of three pesticide manufacturers. The pretreatment systems employed granular activated carbon and resin adsorption, and had permethrin removals of 52%, 75%, and 94%. The average removal was therefore 74%.

Additional information on potential removal of permethrin at POTWs was provided by the EPA as part of its rulemaking on federal categorical discharge standards for pesticide manufacturers under the Clean Water Act. These discharge standards include limitations for permethrin. EPA determined that removal of permethrin at POTWs is expected to be lower than at facilities using best available technology economically achievable (BAT), which is granular activated carbon and resin adsorption for permethrin.⁵ This determination was based on a laboratory study that used ideal conditions to estimate biotreatment removal efficiencies at POTWs for different organic pesticide active ingredient (PAI) structural groups. According to EPA, the study showed that, “BAT removal efficiencies are considerably greater than the PAI removals achieved by biotreatment under laboratory conditions...” Therefore, removal efficiencies at POTWs are likely to be lower than removal efficiencies from granular activated carbon and resin adsorption.

Based on EPA’s information, it appears that less than 74% of the permethrin entering POTWs will be removed. Using a conservative removal of 74%, estimates were prepared of the potential water quality impacts of laundering of Buzz Off Insect Shield Apparel. The calculations are presented in Attachment 1. They indicate that the wastewater produced from the first wash of

¹ See www.exofficio.com/intro.asp?dir_id=406&Group_ID=522&subject=237. The site states, “State registrations have been applied for in every US state and territory, and all 50 states registrations have been approved.”

² State of California Department of Fish and Game, *Hazard Assessment of the Synthetic Pyrethroid Insecticides Bifenthrin, Cypermethrin, Esfenvalerate, and Permethrin to Aquatic Organisms in the Sacramento-San Joaquin River System*, 2000. Available on the DPR web site at www.cdpr.ca.gov/docs/sw/hazasm/hazasm00_6.pdf.

³ See www.exofficio.com/intro.asp?dir_id=406&Group_ID=514&subject=233

⁴ Information on obtaining a copy of the database is available at www.epa.gov/ORD/NRMRL/treat.htm.

⁵ United States Environmental Protection Agency, Office of Water, *Development Document For Effluent Limitations, Guidelines, Pretreatment Standards, and New Source Performance Standards for the Pesticide Manufacturing Point Source Category*, EPA-821-R-93-016, September 1993, pp.7-92 and 7-93.

one heavy garment contains enough permethrin to bring 4.1 million gallons of POTW effluent to the water quality criterion for fresh water. This means that a POTW that treats 4 million gallons per day or less and discharges to a fresh water body without dilution could exceed DFG's aquatic toxicity threshold from laundering a single garment. Larger POTWs could be impacted by laundering of multiple garments.

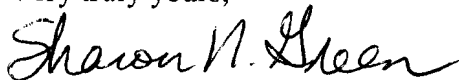
Similarly, the wastewater from the first wash of one heavy garment contains enough permethrin to bring 122 million gallons of POTW effluent to the DFG's salt water aquatic toxicity threshold. This means that a POTW that treats 122 million gallons per day or less and discharges to a salt water body without dilution, such as some of the San Francisco Bay Area POTWs, could exceed the salt water aquatic toxicity threshold from laundering of a single garment. Larger POTWs could again be impacted by laundering of multiple garments, and smaller POTWs that received only small dilution factors could also be impacted.

Please note that these figures only reflect the discharge of permethrin from permethrin-impregnated clothing. Permethrin also is used in a number of other pesticide products, including pharmaceutical treatments for head lice and scabies. Under normal usage, permethrin-containing head lice and scabies treatments are rinsed to the sewer as well. Permethrin in sewers from these pharmaceutical applications must be considered when determining whether additional permethrin can be added to sewers from the laundering of permethrin-impregnated clothing. Taking into account pharmaceutical discharges, the amount of wastewater impacted by laundering of permethrin-impregnated clothing may be considerably higher.

Finally, it should be noted that DPR has registered other pesticide-containing items in California. These items include carbaryl-impregnated shelf paper, pet collars, cattle ear tags, and laboratory rodent bedding. Additionally, it is our understanding that DPR typically registers items that are registered by the EPA. Note that Buzz Off Insect Shield Apparel is fully registered by EPA and that each garment includes an EPA-approved pesticide label.

In summary, Tri-TAC recommends that DPR require the registration of permethrin-impregnated clothing, including Buzz Off Insect Shield Apparel. During the registration process, potential water quality impacts associated with laundering of this apparel need to be considered. Thank you for your consideration in this matter. If you have any questions or require additional information, please contact Ann Heil at 562/699-7411, extension 2950, or aheil@lacsdsd.org.

Very truly yours,



Sharon Green
Chair, Tri-TAC

cc: Mary-Ann Warmerdam, DPR
Wayne Natri, U.S. EPA Region IX, ORA-1
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