



Chemical Specialties Manufacturers Association
Scientific Affairs Department
INTER-OFFICE MEMORANDUM

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To: Janet Kreizman, HIPIC

From: D. Douglas Fratz, ⁹²CSMA Scientific Affairs Department

Date: March 28, 1997

Re: Scientific Review of Washington State "Turning the Tide on Toxics in the Home"

Per your request, we have reviewed for scientific accuracy the Washington State Department of Ecology publication, "Turning the Tide on Toxics in the Home: A Guide to Safer Alternatives and Proper Disposal of Hazardous Household Products," which appears to have been published in 1990. As we have found with many other such publications that we have reviewed, the booklet contains numerous scientific and technical inaccuracies, as well as unsound advice to household consumers. Although there is some sound advice included regarding the safe use and disposal of household products, the general premise that household consumers should be encouraged to formulate their own chemical products is without scientific basis, and fraught with potential hazards while providing little or no actual benefits in terms of health or the environment.

In the following sections, we will review each of the sections of the booklet in order and point out some of the misinformation and misconceptions in each.

Introduction

The estimate of 13.9 million pounds of hazardous wastes going into "household garbage cans" in Washington State is difficult to assess, since there is no established definition of "hazardous wastes" in the domestic solid waste context. The statement that "household hazardous waste disposed of in a landfill may work its way down to the drinking water supply" is not true if the landfill meets EPA standards for solid waste landfills, since they must be lined, and leachate collected and treated. The statement that "Burning toxic materials produces toxic fumes" is not always true; it also obfuscates the fact that the most common toxic fumes hazards for firefighters comes from materials such as the plastics and other polymeric materials that compose much of the

infrastructure and furnishings of homes.

Guide to Product Ingredients, Proper Disposal, Precautions and Safer Alternatives

Many of the ingredients listed in this section are not used in the products (some are not used in any household products), and others are of such low toxicity that the term "toxicants" is highly misleading. The "toxicity ratings" are extremely broad, and often appear assigned randomly. The disposal recommendations are often sound, but the "alternatives" listed are seldom if ever safer, more environmentally benign and as effective as the appropriate commercial formulations. The following represent some of the more important inaccuracies.

Aerosols: Methylene chloride is seldom used in household aerosols (only a few paint removers), and is not a *known* human carcinogen. Nitrous oxide (a gas also used as an anesthetic by dentists) is not one of the two main aerosol propellants, but rather is used solely in aerosol whipped cream; it is also *not* suspected as a carcinogen. The advise to empty the propellant from filled aerosols by turning the can upside down (also repeated in other sections of the booklet) is very unsound advise; this creates a hermetically sealed can of liquid that is no safer than the pressurized product if it is exposed to overheating. Also, many aerosol products have vapor taps in the dip tubes so that when turned upside down they will evacuate liquid as well as propellant. The alternatives of using non-aerosol (pump-spray, roll-on or liquid) products do not provide safety or environmental advantages, and indeed would often mean moving from recyclable aerosol containers to non-recyclable containers.

Air Fresheners/Deodorizers: No household air fresheners contain methylene chloride or formaldehyde, and common household air fresheners do not use p-dichlorobenzene. The use of o-phenylphenol and other antimicrobial ingredients is only for surface disinfection, not air freshening. Sodium sulfate, isobutane and propane are of very low toxicity, approved for food uses. The alternatives to simmer materials on the stove presents a distinct safety hazard, especially in households with children, and wastes energy, creating concomitant adverse environmental effects. The boxed statements that "Most air fresheners/deodorizers do not freshen the air" but rather "desensitize your sense of smell, coating your nasal passages with an oily film" are totally false. Some air fresheners contain an ingredient that chemically binds with odors and removes them from the air, and none are designed to coat nasal passages.

Bleaches: Household bleaches are seldom if ever corrosive. The precaution to avoid mixing chlorine bleach (or any other product containing a hypochlorite compound) with household ammonia (or other products containing ammonium hydroxide) is very important, and should be expanded to include mixing hypochlorite products with acids. Consumers should be encouraged never to mix household products unless the labels specifically instruct them to do so. Unfortunately, this kind of product misuse has been encouraged by booklets such as this one that encourage

consumers to mix their own "cleaning products". Neither lemon juice nor vinegar can function as bleach, nor can they disinfect, like hypochlorite bleaches.

Cleaners/Detergents: Most household cleaners are actually toxicity category 1 or 2, and only a very few (some drain cleaners, some oven cleaners, some toilet bowl cleaners) are corrosive. In general, the "alternatives" given are not effective cleaners, would leave residues, are about equal to commercial cleaner formulations in toxicity, and would present no environmental benefits as compared to commercial formulations. Indeed, the alternative formulations have counter-productive ingredients that waste materials, and leave residues that encourage bacterial growth. Baking soda (sodium bicarbonate) and lemon juice (various organic acids) would react to release carbon dioxide and form sodium salts with no cleaning abilities. Ammonia (actually ammonium hydroxide) and vinegar (acetic acid) will react to form ammonium acetate, another salt with little or no cleaning ability. Baking soda and vinegar similarly react to form sodium acetate, another salt without cleaning power. Borax is *not* a disinfectant, and providing consumers with this misinformation presents a potentially serious public health hazard.

Automotive Cleaners/Polishes: The use of effective products in this category provide clear environmental benefits in extending the lifetime of automotive finishes, as well as safety benefits from better visibility. Encouraging the use of ineffective substitutes is a clear public disservice.

Automotive and Garage Degreasers: There are no household products that contain carbon tetrachloride, and few if any degreasers contain methylene chloride. There are no "non-toxic" citrus or vegetable-oil-based degreasers, and consumers should not be encouraged to buy mislabeled products that violate federal labeling laws.

Disinfectants: Common household disinfectants do not contain formaldehyde or aromatic hydrocarbon solvents. Disinfectants also do not generally contain sodium borate (although it is *recommended*, as borax, in earlier sections and later in this section of this booklet for that use). We know of no instances where household disinfectant has impaired the function of an on-site sewage (septic) system. The pine oil formulation recommended as a "relatively safe household disinfectant" would work, but would be several times more toxic than commercial pine oil cleaner/disinfectant formulations. Rubbing alcohol (70% isopropanol or ethanol) is not an "excellent" disinfectant, since it does not handle many organisms that commercial disinfectants are required to handle by EPA regulation, nor is it safer than commercial disinfectants, since most types of household disinfectants are of lower toxicity and flammability.

Drain Cleaners: No drain cleaners contain trichlorobenzene. The use of boiling water to clear drains represents a distinct safety hazard, as well as wasted energy usage. The use of baking soda (a base) with vinegar (an acid) results in a neutralization reaction that releases carbon dioxide gas and looks impressive, but does

nothing to clear a drain.

Fingernail Polish/Remover: No household product formulations contain benzene.

Handcleaners (Mechanic/Painters): The purpose of these products is to reduce the incidence and severity of contact dermatitis commonly caused by prolonged dermal exposure to tars, oils, greases and other irritants encountered by automotive mechanics and others. They are formulated to be very mild, and to discourage the use of harsh solvents such as gasoline or kerosine for this purpose. Encouraging the use of ineffective hand cleaners such as those in this section presents clear public health risks.

Oven Cleaners: There is little or no methylene chloride used in household oven cleaners. Baking soda and salt (sodium chloride) are not "non-toxic" (the latter, for instance, falls between 2 and 3 on this booklet's toxicity scale, slightly to moderately toxic), despite what Consumer's Union chemists might have declared, nor is it a very effective cleaner for highly-soiled ovens.

Paint Strippers: No household products are formulated with carbon tetrachloride or benzene.

Pesticides: It is a violation of federal law to use or dispose of a registered pesticide in a manner inconsistent with the EPA-approved label. Also, many pesticide uses provide public health protection, and advice to use unregistered, less effective (or completely ineffective) alternatives could have significant adverse public health effects. Many of the "alternatives" suggested here don't work, and present no safety or environmental benefits.

Polishes/Waxes (Wood Furniture and Floors): These products do not contain trichloroethane or phenol, and are generally of low toxicity. The use of vegetable oils on household surfaces encourages the growth of bacteria. Consumers should never be encouraged to apply anything but commercially-formulated floor finishes on walking surfaces, since serious slip-and-fall hazards can be created.

Shoe Polishes: Shoe polishes do not contain trichloroethane, methylene chloride or nitrobenzene. Silicones are among the least toxic household product ingredients.

Toilet Bowl Cleaners: None of the alternatives proposed are effective disinfectants. The boxed statement that, "Manufacturers are not required to tell the public whether or not their products contain chemicals associated with long-term health effects" is *completely false*. Federal labeling laws and regulations, such as the Federal Hazardous Substances Act, administered by CPSC, require label warnings for any adverse effects, acute or chronic, that can be caused by the use of a consumer product.

For More Information

Since the booklet talks about some FDA-regulated products, an address for that agency should have been included. The "Other Organizations" and "Additional Resources" lists includes almost exclusively sources that include the same types of misinformation about commercial household products contained in this booklet.

Revising this booklet to remove inaccurate and misleading information and to provide sound advice to household consumers will require an extensive effort, but the effort should be worth it. The current version encourages a number of activities that present distinct public and environmental health and safety problems. Please let us know if there is anything further we can do to help.

cc: Rob Pauline, Ralph Engel