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Update on Pest Management and Crop Development

April 5, 1993 VOLUME 2 Geneva, NY

CHEMNEWS

LAW

DELANEY CLAUSE UPDATE

❖❖(Editors' note: In view of the interest, rumors and misinformation going around regarding the current status of the Delaney Clause and its implementation, we are reprinting portions of an article written on this subject by Bill Smith, Pesticide Mgt. Education Program, Ithaca, in his March 1993 newsletter. We have included in the pesticide lists only those materials with registered uses in tree fruits and grapes.)

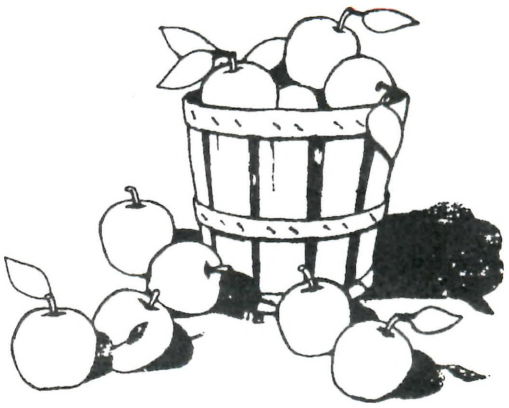
Summary of EPA Announcement Relating to the Delaney Clause

The Delaney Clause in the Federal Food, Drug and Cosmetic Act (FFDCA) provides that no additive (including pesticides) may be approved for processed food if it has been found to induce cancer in man or animals; EPA regulates pesticide residues in food under FFDCA and has interpreted the Delaney Clause as subject to an exception for carcinogenic pesticides that pose only a negligible risk (this interpretation was adopted in 1988 upon the recommendation of the National Academy of Sciences).

In July 1992, the Ninth Circuit Court of Appeals overturned EPA's interpretation of the Delaney Clause, holding that the Delaney Clause bars tolerances (maximum allowable levels of residues in food) for carcinogenic pesticides in processed food, regardless of the degree of risk. On February 22, 1993, the U.S. Supreme Court declined to review the petition for a writ of *certiorari* that had been filed by the National Agricultural Chemicals Association (NACA). The decision not to review the Delaney amendment to the Federal Food Drug and Cosmetic Act essentially means that EPA is now required to begin evaluating pesticides under the Delaney Clause.

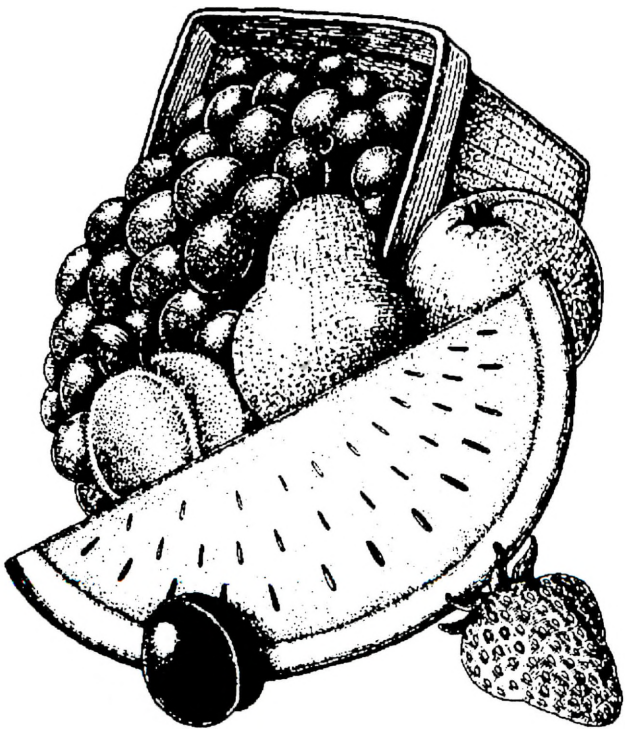
The Agency has developed a list that includes pesticide/crop combinations that may possibly be affected by the recent Ninth Circuit Court of Appeals decision overturning EPA's *de minimis* policy. EPA does not believe that the pesticides in these lists pose an unreasonable risk to public health based on the available data. These lists do not represent an EPA conclusion that each of these pesticide uses will be cancelled. Rather, these lists describe the universe of pesticide uses that could be affected. Whether or not many of these uses are affected depends on the resolution of several complex policy as well as scientific issues.

On February 5, 1993, the Agency issued a Federal Register Notice asking the public to comment on these scientific policy issues. The release of these lists does not affect the regulatory status of any of the pesticides or uses listed. If EPA proposes to revoke tolerances under the FFDCA, the Agency will use appropriate procedures in each instance, including seeking public comment.❖❖



List I

REGISTERED PESTICIDE	RAW CROP (408s)	PROCESSED FOOD/FEED WITH 409 TOLERANCE(S)
Benomyl	Apples	Pomace (Dried) (186.350)
	Grapes	Pomace (dried) (186.350)
		Raisins (185.350)
		Raisin Waste (186.350)
Captan	Grapes	Raisins (185.500)
Mancozeb	Grapes	Raisins (185.6300)
Propargite	Apples	Dried pomace (186.5000)
	Grapes	Raisins (185.5000),Dried pomace (186.5000)
Thiophanate-methyl	Apples	Pomace (dried)(186.5700)
Triadimefon (Bayleton)	Apples	Pomace (186.800)
	Grapes	Pomace (186.800)
		Raisin Waste (186.800)



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This newsletter available on CENET, in the Tree Fruit News bulletin board under FRUIT.

List II

The following list of pesticides do not have established section 409 food additive tolerances, but based upon data indicating concentration during processing, would require food additive tolerances under EPA's current policy.

REGISTERED PESTICIDE	CROP(S) WITH SECTION 408 TOLERANCE(S)	PROCESSED FOOD(S) WITH NO SECTION 409 TOLERANCE(S)
Captan	Apples	Dried Pomace
	Grapes	Raisin Waste, Juice and Dried Pomace
	Plums	Prunes
Dicofol	Apples	Dried Pomace
	Grapes	Dried Pomace, Raisins, Raisin Waste
Dimethoate	Apples	Juice
Mancozeb	Apples	Dried Pomace
	Grapes	Raisin Waste
Maneb	Apples	Dried Pomace
Metiram	Apples	Dried Pomace
Oxyfluorfen	Apples	Dried Pomace
Propargite	Plums	Prunes

SPRAY WATER

EFFECT OF pH ON PESTICIDE ACTIVITY

(Art Agnello)

❖❖ There may be times when you don't get the expected results from a pesticide application, even though you used the correct concentration of the recommended material and applied it in the same way that has given acceptable control at other times. Although you may suspect a bad batch of chemical or a buildup of pesticide resistance, the poor results may in fact be due to alkalinity — that is, a solution with a pH higher than 7.0. A close inspection of the pesticide label will often reveal a caution against mixing the chemical with alkaline materials such as lime or lime sulfur. The reason is that many pesticides, particularly insecticides, undergo a chemical reaction under alkaline conditions that destroys their effectiveness. This reaction is called alkaline hydrolysis, and can occur when the pesticide is mixed with alkaline water or other materials that cause a rise in the pH.

Hydrolysis is the splitting of a compound by water in the presence of ions. Water that is alkaline has a larger concentration of hydroxide (OH-) ions than water that is neutral; therefore, alkaline hydrolysis increases as the pH increases. Insecticides are generally more susceptible to alkaline hydrolysis than are fungicides and herbicides, and of these, organophosphates and carbamates are more susceptible than pyrethroids.

A survey of fruit-growing areas in N.Y. showed that water from as many as half of the sites in western N.Y. had pH values above 8.0. Water at this pH could cause problems for compounds that will break down in only slightly alkaline water, such as ethephon (Ethrel). Compounds that break down at a moderate rate at this pH, such as Carzol and Imidan, should be applied soon after mixing to minimize this process in the spray tank. A smaller number of sites (less than a quarter of them) had pH levels greater than 8.5. Above this level, the rate of hydrolysis is rapid enough to cause breakdown of compounds such as Carzol and Imidan if there is any

delay in spraying the tank once it is mixed. In a few sites having a pH above 9.0, compounds such as Guthion and malathion, which would not break down in most situations, may have problems. It is also important to note that in any one site, ground water pH can vary substantially (by nearly 2 pH units) during the season.

In order to prevent alkaline hydrolysis, you should:

1 - Determine the pH of your spray solution; because of seasonal variability, this should be done more than once during the growing season. Measuring your spray water pH before mixing can be misleading, because the chemicals you use can raise or lower the pH of the overall spray solution. It makes more sense to take the time to run some bottle tests of your most-used spray materials after they have been mixed with your spray water. The most accurate method is by using an electronic pH meter; however, these are expensive and not very practical. Another, less accurate method uses dyes that change color in response to pH. These are available in the form of paper strips, or in solution for use in soil pH test kits. In general, the indicator is mixed with or dipped into the water, and the resulting color is compared against a standard color chart.

2 - To minimize loss of chemical effectiveness from hydrolytic breakdown in the tank, it is a good practice to apply right after it is mixed (as much as is allowed by the weather and other factors). If a delay occurs, a buffering agent may be added to the tank if the pH is high and the chemical you are using is susceptible to alkaline hydrolysis; these agents work by lowering the pH and resisting pH change outside of a certain range. A pH in the range of 4-6 is recommended for most pesticide sprays.

Buffering agents are available from many distributors; some examples are: Buffer-X (Kalo Lab), Nutrient Buffer Sprays (Ortho), Spray-Aide (Miller), Sorba-Sprays (Leffingwell), Mix Aid (Agway), and Unite (Hopkins). Some sources for pH testing materials are (pH Indicator Paper): Ward's Natural Science Est., PO Box 1712, Rochester, NY 14603; VWR, PO Box 1050 Rochester, NY 14603; Fisher Scientific, PO Box 8740, Rochester, NY 14642; (Soil pH Test Kits): Agronomy Soil Test Lab, 804 Bradfield Hall, Cornell Univ., Ithaca, NY 14853.

Growers often add technical flake calcium chloride to the tank when spraying cultivars such as McIntosh, which is susceptible to storage disorders related to inadequate levels of fruit calcium. However, research done in Massachusetts indicates that, although calcium chloride does not itself affect pH, a contaminant present as a result of the manufacturing process does increase the pH of the solution; this could in turn encourage alkaline hydrolysis. There are a few pesticide materials that should not be acidified under any circumstances, owing to their phytotoxic nature at low pH. Sprays containing fixed copper fungicides (including Bordeaux mixture, copper oxide, basic copper sulfate, copper hydroxide, etc.) and lime or lime sulfur should not be acidified. But if the product label tells you to avoid alkaline materials, chances are that the spray mixture will benefit by adjusting the pH to 6.0 or lower.

For further information on water pH and pesticide effectiveness, refer to N.Y. Food & Life Sci. Bull. No. 118, "Preventing decomposition of agricultural chemicals by alkaline hydrolysis in the spray tank", by A. J. Seaman and H. Riedl, from which much of this information was adapted.❖❖

SECTION 18 UPDATE

LAST BUT NOT LEAST
(Art Agnello)

❖❖ I received word last week that New York's Section 18 request for Agri-Mek on pears was passed by the N.Y. Dept. of Environmental Conservation and sent on to the EPA for their consideration. According to a 1992 Pesticide Fee bill, the EPA needs 60 days to reach a final decision, so I would expect them to take all of it, which still should leave enough time for growers and distributors to act in a timely manner, in the case of a favorable outcome.❖❖

INSECT TRAP CATCHES

Number/Trap/Day, Geneva NY

	3/29	4/1	4/5
Green fruitworm	0	0	0
Pear psylla	0	0	0
Redbanded leafroller			0
Spotted tentiform leafminer			0

Number/Trap, HVL, Highland NY

	4/1	4/4
Green fruitworm	0	0
Pear psylla (board trap)	*	0
Redbanded leafroller		0
Spotted tentiform leafminer		0
Sparganothis fruitworm		0

* = 1st catch
(Dick Straub, Peter Jentsch)

PHENOLOGIES

Apple, pear, cherry, peach, plum: **All dormant**

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1 - 4/5):	22	6
(Highland 1/1 - 4/5):	39	25

Coming Events:	Ranges:	
Green fruitworm 1st catch	41-143	9-69
Pear psylla adults active	2-121	0-42
Pear psylla 1st oviposition	27-147	10-72
Redbanded leafroller 1st catch	32-480	17-251
Spotted tentiform leafminer 1st catch	73-433	17-251

NOTE: Every effort has been made to provide correct, complete and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are possible. These recommendations are not a substitute for pesticide labelling. Please read the label before applying any pesticide.

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