Appendix J: Ecological Incidents Data in the United States

Mancozeb

Incidents in RED

The Ecological Incident Information System (EIIS) showed that mancozeb was reported in three fish kill incidents. One incident occurred in 1970 (B000-233), another in 1992 (I000799-008) and the latest occurred in 1995(I008745-004). In the 1970 and 1992 incidents, mancozeb had been applied with an insecticide highly toxic to fish and, because of sample analysis, EFED classified mancozeb as unlikely to have been responsible for the these fish kills. The third incident in 1995 involved a mancozeb accidental spill into a stream that was the source water for a salmon hatchery which resulted in a fish kill at the salmon hatchery. Although no samples were analyzed (fish or water), EFED classed mancozeb to be a probable contributory cause to the kill. A fourth, and final incident, reported that mancozeb tanked mixed with benomyl and applied to apple trees may have caused leaves and blossoms to drop from the trees. According to the registrant, identical applications made by other growers in the area to apple orchards did not result in this damage and EFED classed mancozeb as a possible contributory cause of the damage.

Mancozeb Incidents from EIIS (in RED)

Incident Number	Pesticide(s) Involved	Date (month/year)	Adverse Effect	Certainty	Magnitude of Damage
B0000-501-42	mancozeb & benomyl	unknown	Plant damage	2	not reported
B0000-233	mancozeb, sulfur, & thiodan	7/1970	Fish kill	1	thousands
I000799-008	mancozeb, maneb, fenarimol, & endosulfan	4/1992	Fish kill	1	> 600 fish
I008745-004	mancozeb	7/1995	Fish kill/spill	3	30,000 to 35,000 fish

Certainty Code: 0=Unrelated, 1=Unlikely, 2=Possible, 3=Probable, 4=Highly Probable

Incidents not included in the RED

Incident 1013884-013 occurred in1998 in King County, Washington. This incident reported plant damage to a fruit and vegetable garden resulting from spray drift while neighbor's birch trees were sprayed. The extent of damage was not reported. Chemical analysis showed a trace of applied pesticide. The certainty index for this incident was probable.

Incident 1010837-010 occurred in 2000 in Volusia County, Florida. This incident reported plant damage to 50 acres of a crop of ornamentals resulting from direct application of mancozeb and trifloxystrobin. The application rate and method was not reported for mancozeb but was reported for trifloxystrobin. The certainty index for this incident was possible for mancozeb and probable for trifloxystrobin.. Terrestrial plant

data for mancozeb conducted with TEP containing 60% mancozeb co-formulated with 9% dimethomorph does not suggest toxicity to terrestrial plants. None of the species tested displayed 25% inhibition for the parameters tested in non-target seedling emergence toxicity (Tier 1) and non-target vegetative vigor toxicity (Tier 1) studies. Terrestrial plant data for trifloxystrobin resulted in an EC25>the highest concentration tested; therefore an assessment of risks was not possible. However, another strobilurin fungicide is highly toxic to terrestrial plants.

Incident 1014406-002 occurred in 1996 in Walla Walla County, Washington. This incident reported damage to an onion field resulting from aerial application of diazinon, metalaxyl, mancozeb, and chlorothalonil. The certainty index for this incident was possible for all the chemicals. Terrestrial plant data for mancozeb conducted with TEP containing 60% mancozeb coformulated with 9% dimethomorph does not suggest toxicity to terrestrial plants. The non-target seedling emergence study resulted in a 12% dry weight inhibition for onions and the non-target terrestrial plant vegetative vigor toxicity (Tier 1) study resulted in 2% dry weight inhibition.

Incident 1014597-034 occurred in 1996 in Umatilla County, OR. This incident reported 46% plant damage to 240 acres of potatoes resulting from seed treatment with mancozeb and fludioxonil. The product had been applied to seed but no mention was made of the type of damage that occurred with the plants. The certainty index for this incident was possible for both chemicals. Terrestrial plant data for mancozeb conducted with TEP containing 60% mancozeb coformulated with 9% dimethomorph does not suggest toxicity to terrestrial plants. There is no available non-target terrestrial plant data for fludioxonil; however, there a numerous terrestrial plant incidents associated with this chemical.

Mancozeb Incidents from EIIS (not in RED)

Incident Number	Pesticide(s) Involved	Date (month/year)	Adverse Effect	Certainty	Magnitude of Damage
1013884-013	mancozeb	6/1998	Plant damage	3	unknown
1010837-010	mancozeb & trifloxystrobin	4/2000	Plant damage	2	50 acres
1014406-002	Mancozeb, diazinon, metalaxyl, and chlorothalonil	6/1996	Plant damage	2	unknown
1014597-034	Mancozeb & fludioxonil	11/2002	Plant damage	2	46% plant damage to 240 acres

Certainty Code: 0=Unrelated, 1=Unlikely, 2=Possible, 3=Probable, 4=Highly Probable

Maneb

Incidents Described in RED

The Ecological Incident Information System (EIIS) reported maneb in three fish kill incidents. An incident (Incident No. B000-223), occurring in August, 1973, reported by

the Oregon Department of Agriculture showed some fish in a 15 acre pond had been killed. Presumably drift from an aerial application of maneb and endosulfan to potatoes caused the kill. No analyzes of the dead fish was provided. Both maneb and endosulfan are very highly toxic to freshwater fish [maneb rainbow trout LC50 = 42.0 ppb and endosulfan rainbow trout LC50 = 0.37 ppb (US EPA. 2001)] and both pesticides could have been responsible for the fish kill, if in fact the kill was pesticide related. However, the inadequate information provided with this reported incident and the lack of laboratory analyzes makes it difficult to determine the cause of the fish kill.

The second maneb related incident (Incident No. I003826-030) occurred in June, 1994 and was reported by the North Carolina Department of Agriculture. The owner of a 2.5 acre commercial fishpond filed a complaint of a fish kill in the pond because of drift from applications of maneb, trifluralin, imazaquin, pendimethalin, and acephate aerially applied to corn and soybean fields near the pond. The owner felt the fish kill was a result of drift from these pesticides. The North Carolina Department of Agriculture investigated this complaint and took samples for analyzes but the sampling evidence did not confirm the presence of maneb or the other pesticides listed in the samples taken. Based on the investigation and the analysis of samples, it is unlikely that maneb contributed to this fish kill.

The final maneb related incident (Incident Nos. I002200-001 and I003596-001), occurring in August, 1994, was reported by the Maine Department of Agriculture. In this incident roughly 10,000 newly released brook trout were killed in a pond that borders New Brunswick, Canada and Maine. Three pesticides (maneb, esfenvalerate, and chlorothalonil) recently applied to potatoes surrounding this pond were suspected in this fish kill. Tissue samples of the fish confirmed the presence of all three pesticides (maneb at 169 ppb, esfenvalerate at 4.2 ppb, and chlorothalonil at 20 ppb) in the fish. These fish samples were taken from both the pond and brooks feeding the pond. Again, as in the first incident, all three of these pesticides are very highly toxic to freshwater fish. Maneb's rainbow trout LC50 is 42.0 ppb, esfenvalerate's rainbow trout LC50 is 0.26 ppb (Hicks, L. May, 1995) and chlorothalonil's rainbow trout LC50 is 42.3 ppb (US EPA. 1998)]. The submitter of the incident report pointed out there were severe thunderstorms in the area preceding the fish kill which suggest pesticide runoff was a cause in this kill. Based on sampling evidence, EFED believes maneb was contributory cause in this fish kill.

Mancozeb Incidents from EIIS (in RED)

Incident Number	Pesticide(s) Involved	Date (month/year)	Adverse Effect	Certainty	Magnitude of Damage
B000-223	Maneb & Endosulfan	8/1973	Fish kill	2	
I003826-030	maneb, trifluralin, imazaquin, pendimethalin, and acephate	7/1994	Fish kill	1	

Mancozeb Incidents from EIIS (in RED)

Incident Number	Pesticide(s) Involved	Date (month/year)	Adverse Effect	Certainty	Magnitude of Damage
I002200-001 and I003596-001	maneb, esfenvalerate, and chlorothalonil	8/1994	Fish kill	2	10,000

Certainty Code: 0=Unrelated, 1=Unlikely, 2=Possible, 3=Probable, 4=Highly Probable