APPENDIX I: Oryzalin Incidents

A search for ecological incidents related to oryzalin use, conducted on 28 February 2008, yielded six incidents. Of these, one incident pertained to aquatic organisms where as five incidents were on terrestrial plants. The summary of the six incidents reported for oryzalin is provided below.

H.1 Aquatic Incidents

Approximately 450 bluegill sunfish and largemouth bass were killed between April 6 and 13, 2001 in Georgia, following the application of a formulated product of oryzalin (Surflan) on March 31. Rain fell on 4 April and it is possible that the pond was contaminated by either spray drift or runoff. The legality of use for this incident was listed as "misuse". Residues in fish tissue were not measured. The certainty index for this incident (I011444-011) is POSSIBLE.

H.2 Terrestrial Incidents

The Washington Department of Agriculture reported that 13 acres of merlot wine grapes in Grant county were damaged on April 3, 1998 due to direct application of oryzalin. The legality of use for this incident was listed as "registered use". The certainty index for this incident (I013884-027) is UNLIKELY as oryzalin is a registered pesticide in grape. The damage to grapes is possibly due to the application of norflurazon, the legality of which was listed as "misuse".

A plant incident (7/3/1992) that resulted in damage to trees and shrubs (specific plants not reported) was reported from Benton county, Washington in 1992. The incident resulted due to applicator error of mixing oryzalin with bromacil/diuron. The legality of this use was reported as "undetermined". The certainty index for this incident (I014409-062) is POSSIBLE.

A nursery in the Washington county of Oregon reported on February 2, 2002 that six acres of tulips were damaged by exhibiting twisting of leaves. The certainty index for this incident (I013636-027) is POSSIBLE. The legality of this use was reported as "registered use". The report mentions that isoxaben was used along with glyphosate, diclofop-methyl, fenhexamid, iprodione, and oryzalin and that diclofop-methyl was used previously used in the sprayer.

Dow Elanco reported an incident in 1994 that 676,000 Douglas fir seedlings treated with Snapshot herbicide (isoxaben + oryzalin) had to be discarded as they turned chlorotic and swollen. The certainty index for this incident (I001485-001) is "undetermined" and the legality was reported as POSSIBLE. The incident report noted that little information was provided to determine which herbicide in the mixture caused the damage.

An acre of Idaho strain fir trees experienced loss of turgidity, necrosis, stem brittleness, fissures, and death in Washington state in 1989/90. Pesticide application history indicated use of oxyfluorfen at planting, napropamide one month after planting, oxyfluorfen five months after planting, and oryzalin eleven months after planting. The legality of use for this incident was listed as "intentional misuse" as the label for Surflan (oryzalin) clearly states "do not apply to Douglas fir". The certainty index for this incident (I001734-001) is PROBABLE.

H.3 Uncertainties Related to the Use of Incident Information from the Ecological Incident Information System

Incident data are used in risk assessments to provide evidence that the risk predictions from the screening level assessment are supported by actual effects in the field. Incident reports submitted to EPA since approximately 1994 have been tracked by assignment of incident numbers in an Incident Data System (IDS), microfiched, and then entered to a second database, the Ecological Incident Information System (EIIS). Additionally, there is an on-going effort to enter information to EIIS on incident reports received prior to establishment of current databases. Incident reports are not received in a consistent format (*e.g.*, states and various labs usually have their own formats), may involve multiple incidents involving multiple chemicals in one report, and may report on only part of a given incident investigation (*e.g.*, residues).

Incidents entered into EIIS are categorized into one of several certainty levels regarding the likelihood that a particular pesticide is associated with the incident: highly probable, probable, possible, unlikely, or unrelated. In brief, "highly probable" incidents usually require carcass residues and/or clear circumstances regarding the exposure. "Probable" incidents include those where residues were not available and/or circumstances were less clear than for "highly probable." "Possible" incidents include those where multiple chemicals may have been involved and it is not clear what the contribution was of a given chemical. The "unlikely" category is used, for example, where a given chemical is practically nontoxic to the category of organism killed and/or the chemical was tested for but not detected in samples. "Unrelated" incidents are those that have been confirmed to be not pesticide-related.

Incidents entered into the EIIS are also categorized as to use/misuse. Unless specifically confirmed by a state or federal agency to be misuse, or there was very clear misuse such as intentional baiting to kill wildlife, incidents are not typically considered misuse.

The number of documented kills in EIIS is believed to be a small fraction of total mortality caused by pesticides. Mortality incidents must be seen, reported, investigated, and have investigation reports submitted to EPA to have the potential for entry into the database. Incidents often are not seen, due to scavenger removal of carcasses, decay in the field, or simply because carcasses may be hard to see on many sites and/or few people are systematically looking. Poisoned animals may also move off-site to less conspicuous areas before dying. Incidents may not get reported to appropriate authorities capable of investigating the incident for a variety of reasons including the finder may not know of the importance of reporting incidents, may not know who to call, may not feel they have the time or desire to call, or may hesitate to call because of their own involvement in the kill. Incidents reported may not get investigated if resources are limited or may not get investigated thoroughly, with residue analyses, for example. Also, if kills are not reported and investigated promptly, there will be little chance of documenting the cause, since tissues and residues may deteriorate quickly. Reports of investigated incidents often do not get submitted to EPA, since reporting by states is voluntary.

Furthermore, the database relies heavily on registrant-submitted incident reports, and registrants are currently only required to submit detailed information on 'major' ecological incidents, while 'minor' incidents are reported aggregately.

Based on the 40 CFR (§159.184 Toxic or adverse effect incident reports), an ecological incident is considered ‘major’ if any of the following criteria are met:

Fish or wildlife*:*

(A) Involves any incident caused by a pesticide currently in Formal Review for ecological concerns.

(B) Fish: Affected 1,000 or more individuals of a schooling species or 50 or more individuals of a non-schooling species.

(C) Birds: Affected 200 or more individuals of a flocking species, or 50 or more individuals of a songbird species, or 5 or more individuals of a predatory species.

(D) Mammals, reptiles, amphibians: Affected 50 or more individuals of a relatively common or herding species or 5 or more individuals of a rare or solitary species.

(E) Involves effects to, or illegal pesticide treatment (misuse) of a substantial tract of habitat (greater than or equal to 10 acres, terrestrial or aquatic).

Plants:

(A) The effect is alleged to have occurred on more than 45 percent of the acreage exposed to the pesticide.

All other ecological incidents are considered ‘minor’ and only need to be aggregately reported. ‘Minor’ incidents reported by the registrants are not included in the EIIS database. Therefore, for example, an incident could affect 900 fish, 150 birds, 45 mammals, and 40% of an exposed crop and not be included in the EIIS database [unless is it reported by a non-registrant (*e.g*., an incident submitted by a state agency – which are not systematically collected)]. Therefore, because the number of documented kills in EIIS is believed to be a small fraction of total mortality caused by pesticides, absence of reports does not necessarily provide evidence of an absence of incidents.