

US EPA ARCHIVE DOCUMENT

ECOLOGICAL EFFECTS BRANCH

100.0 Purpose of Submission


The Registrant, United States Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS), has submitted a study entitled, "Sodium Fluoroacetate (Compound 1080) contamination on the necks of lambs with Livestock Protection Collars (LPCs) that are killed by coyotes" to satisfy the data requirements of the Data Call-In Notice.

The February 3, 1987 Data Call-In Notice specified, as a condition to registration, that data on the hazard of the 30 ml LPC to non-targets was required. This requirement was deemed necessary because the EEB estimated that there would be sufficient contamination of the lamb carcass to pose a hazard to non-target predators, scavengers and raptorial species. In addition, it was estimated that an attacking coyote may consume enough Compound 1080 to pose a hazard to any non-target animal that might scavenge the coyote.

101.0 Study Results

The following is a summary of the reported study results:

Residue of 1080 in Coyote Muscle:

Muscle samples from 10 test coyotes (killed after puncturing the 1080 LPC) and 3 control coyotes were collected. The mean residue in the 10 treatment coyotes was 0.089 ppm (± 0.023) of 1080. For the five coyotes that punctured 1 pouch the mean residue was 0.063 ± 0.012 ppm. For the five coyotes that punctured 2 pouches the mean residue was 0.114 ± 0.043 ppm. 

Amount of 1080 on Sheepskin

Twelve contaminated sheepskins and 30 1080 field-spiked 4 x 4 " pieces of sheepskin were analyzed for 1080. The mean residue for the 12 contaminated skins was 96 ± 14 mg of 1080. The 7 skins, from tests with only 1 pouch punctured contained 75 ± 12 mg of 1080. The 5 skins with two pouches punctured contained 127 ± 23 mg of Compound 1080.

Loss of 1080 from Punctured Collars

The mean \pm SE of 1080 lost from the 12 collars was 92 ± 56 mg, range = 3-183 mg. For the collars that had only 1 pouch punctured the loss was 61 ± 34 mg, range from 3-114 mg, and for collars that had 2 pouches punctured the

loss was 136 ± 54 mg, range = 63-183 mg.

103.0 Study Conclusions

The Following is a brief summary of the reported study conclusions:

The "worst case" situation for the amount of 1080 on contaminated sheepskins results when both of the pouches are punctured. Based on results of this study the average mean is 192 mg or 19.2 ml of 1080 when this occurs. This represents 64% of the total dosage available in the collar. This value is about 4 times higher than what was applied to simulated coyote-killed sheep that were fed to skunks and golden eagles in a test conducted by Burns et al. 1984 and is more than enough to kill most scavengers that would feed on the contaminated carcass if the area were the primary feeding site.

104.0 Discussion

One of the major problems with assessing hazard associated with the use of Compound 1080 has been the lack of a reliable method for analyzing residues. Because the EEB does not have the expertise to comment on the analytical method used in this study and because it has not received a copy of the EFGWBs' review, relative to the adequacy of the method, the following discussion assumes that the "new" analytical and extraction methods, developed by USDA/APHIS, are reliable and accurate and capable of measuring residues at the reported detection limits.

In previous reviews, the EEB estimated that the 30 ml LPC could pose a hazard to numerous non-target predators, scavengers and raptors. The Agency agreed to conditionally register the collar provided the USDA/APHIS conduct certain studies to determine if, in fact, the use of the LPC posed any hazard to non-target species. The results of the submitted study supports EEBs' initial assessment that there would be sufficient 1080 residues on the necks of coyote attacked sheep to adversely affect non-target species. In fact, based on the results presented in the study, even if only one of the pouches were punctured, there would be approximately 2 times the amount of 1080 (105 mg) to pose a hazard to most predator and scavenger species that might feed on the carcass.

In their conclusions, USDA/APHIS admitted this hazard could occur, ..." if the contaminated area were the primary feeding site". They further commented ..." However, the usual site for scavenger feeding is where the carcass has been entered by the coyote." and that,

"Consumption of 1080 contaminated wool/hair by a scavenger is only incidental to their feeding on flesh."

The EEB believes that this argument oversimplifies the issue and underestimates hazard in that it does not account for the great variation in the feeding behavior for numerous predators and scavengers. For instance, some raptorial species typically pull off hair, fur and/or feathers from the carcass before feeding, while some mammalian scavengers tend to "maul" a carcass before consuming it. On occasion, certain species will actually move a carcass to a more "secure" area before feeding, while others will cache the carcass. In all of these cases the scavenger may come into contact with the contaminated area. Therefore, while these feeding behaviors may be only "incidental" to the actual consumption of the flesh, they still can result in significant exposure for certain species. Finally, it must also be remembered that certain species may consume the entire carcass and not just feed on any one portion of it.

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Conclusions

Based on the results of the study, the EEB must conclude there is hazard to non-target species (including non-target coyotes) from the use of the LPC on sheep. Residue data collected from the neck area of collared sheep show that even if only one of the pouches are punctured during an attack, there still is approximately 2 times the amount of 1080 available to pose hazard to numerous non-target species. Based on the residues found in coyote muscle, the EEB does not believe there is any hazard to scavengers from consuming coyotes that have been killed by the collar. The EEB, however, still believes that a hazard to non-targets may exist from exposure to coyote vomit. Further testing may be required to determine if there is hazard from this source of exposure.

The EEB believes that feeding patterns and behavior play an important role in determining what species are most likely to be adversely affected from the proposed use and that a scavenger does not have to feed directly on the contaminated area to be exposed.

The EEB further believes that additional testing is required to determine what effects the use of the 30 ml LPC will have under actual use (field) conditions.

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Summary

The results of the study do not rebut the Agency's

presumption that the use of the LPC will cause adverse effects to non-target mammalian and avian species. In fact, the residue data indicate a much greater hazard than the EEB had previously estimated. Additional data, which show that adverse effects to non-target species are not likely to occur under field-use conditions, must be submitted to support the continued registration of the LPC.

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