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Pesticide Poisoning of Seagulls

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Wildlife Diseases FACTSHEET

Pesticide Poisoning of Seagulls

Introduction

In April 2000 a major pesticide leak caused the death and illness of a significant number of wild birds. The findings and conclusions of this die-off are detailed.

Details

On Saturday, April 15th, 2000 reports were received from numerous sources of sick and dead herring gulls (Figure 1) around a city lake (Quidi Vidi Lake, see Figure 2). Symptoms included vomiting, lethargy, drooped wings, paralysis and in some cases very alert birds that could not control their body movement but would defend themselves with their beaks.



Figure 1: Sick Herring Gull

Throughout the remainder of the weekend and up until approximately April 25th affected birds were being recovered from ponds and other spots in the St. John's area. In some cases birds observed overnight would recover and eventually be released.

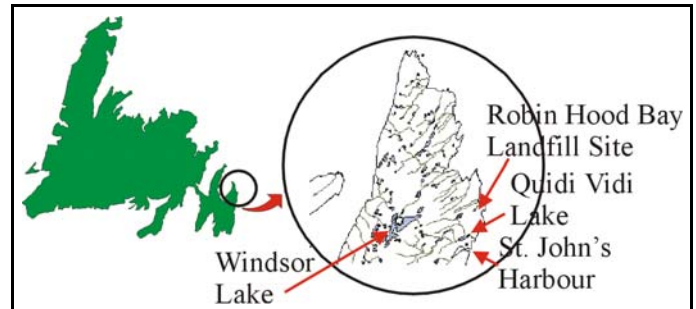


Figure 2: Affected areas

Investigations determined that on Friday, April 14th, a cannister had exploded at the St. John's municipal landfill site (Robin Hood Bay) due to the action of the landfill's compactor. The fluid that hit the compactor and accompanying bulldozer was, according to the equipment operators, orange-yellow and smelled noxious. These employees washed down the equipment and worked elsewhere on the site for the remainder of the day. No samples were available for analysis from the equipment or the cannister as it was buried.



Figure 3: Starling, Crow, Raven & Herring Gull

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Initial suspicions for cause of the illness were centered on the landfill site and included pesticides, botulism and rat poison (zinc phosphidine had been used previously). Analysis of stomach contents performed at the Atlantic Veterinary College and Environment Canada lab (St. John's) revealed the presence of fensulfothion (Dasanit). Brain cholinesterase inhibition was measured in a number of samples as well confirming the action of the pesticide. Tests were negative for botulism and rat poison.

Final counts of dead birds exceeded 800 with herring gulls representing the largest single species affected, others included greater black-backed gulls, ring-billed gulls, northern ravens, starlings, and crows (see Figure 3).

Though it is assumed that the cause of the die-off was the exploded cannister it was never recovered due to human health risks and the benefit of leaving the product where it was. Dasanit was first put on the market in 1957 and commonly used in past years to control root maggot in root crops but has not been sold commercially for 10-15 years and was removed from the market by the manufacturer in 1995.

Discussion

The active ingredient, fensulfothion, is in the family of organophosphate pesticides. These are generally considered to be more environmentally friendly than the related organochlorines partially because the organophosphates breakdown more quickly in the environment and therefore do not have a long term environmental effect.

Pesticides are also classified by their relative toxicity. With respect to acute oral toxicity for birds, the categories include:

Rating	LD ₅₀ (mg/kg)
Very highly toxic	< 10
Highly toxic	10-50
Moderately toxic	51-500
Slightly toxic	501-2,000
Relatively non-toxic	>2,000

The LD₅₀ is the quantity of pesticide needed (expressed as mg of pesticide per kg of body weight of the animal consuming it) to kill 50% of tested animals.

Fensulfothion has an LD₅₀ in birds of 0.749 mg/kg, making it a very highly toxic pesticide. This means that if 100 seagulls, each weighing 1 kilogram, each consumed 0.749 milligrams of fensulfothion, 50 of them would die.

As the cannister was not recovered, we do not know whether this was a full, sealed, original container or whether it was in some smaller volume. If it were the original cannister it would have probably been the 10 litre size commonly sold, which had a concentration of 720 grams of fensulfothion per litre. If this were the case, the potential for bird deaths was much higher than actually measured.

The disposal of this pesticide in this manner was clearly illegal and, in addition to the high number of bird deaths, caused a significant human health risk to the employees at the landfill and those who carried out investigations.

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Photo credits: Canadian Wildlife Services

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