Strychnine Usage Timeline for Richardson's Ground Squirrel Control in Alberta

Health Canada's Pest Management Regulatory Agency (PMRA) was founded in 1995 and is responsible for pesticide regulation in Canada. Strychnine pesticide for Richardson's Ground Squirrel (RGS) control was registered in Canada in 1928. The *Pest Control Products Act* requires that all registered pesticides be re-evaluated at least every 15 years to ensure that the risks continue to be acceptable according to current standards. Therefore, in recent years, re-evaluation of strychnine use has been carried out by PMRA cyclically, approximately every 15 years.
https://publications.gc.ca/collections/collection_2024/sc-hc/h113-8/H113-8-2024-1-eng.pdf

1928 to **1992**

Strychnine pesticide for Richardson's Ground Squirrel (RGS) control was registered in Canada in 1928.

1992-2001

Two percent strychnine was deregistered from **1992-2001** due to environmental risks for inadvertent poisoning of non-target organisms. Secondary poisoning occurs when gopher carcasses containing strychnine remain on the soil surface and are devoured by other animals, including species at risk such as the swift fox and the burrowing owl.

2001 to **2003**

Strychnine registration was restored by PMRA in 2001 during an explosion in the gopher population. **Emergency registration** authorization was granted from **2001 to 2003** that allowed municipalities to purchase strychnine concentrate for re-sale in a fresh mixed, ready-to-use product.

In 2002, PMRA initiated an integrated pest management committee to search for alternative, long-term RGS control measures while permitting strychnine as an interim measure[2]. The Richardson's Ground Squirrel Integrated Pest Management Steering Committee consisted of experts from producers, industry, researchers, provincial governments and Health Canada. The primary objective of this Committee is to identify, develop and promote the use of products other than strychnine, as well as viable non-chemical integrated pest management-compatible control methods. The current lead for this Committee is the Saskatchewan Agriculture and Food. The targeted year for the completion of this project is 2008.

2007

PMRA issued a one-year emergency use registration for 2% strychnine in 2007. Producers could purchase strychnine from rural municipalities, counties or other authorized distributors until July 31, 2007. **PMRA began funding a research program in 2007 to compare the efficacy of strychnine products with other registered alternatives.**

2008

2008 was similar to 2007: PMRA granted emergency registration of two percent liquid strychnine and its associated conditions of registration to be the best interim approach for addressing the localized high populations of Richardson's ground squirrels while further research is being conducted to find a more long-term sustainable solution.

2009

In light of the research program initiated in 2007, **in 2009 the PMRA authorized the emergency registration of 2% liquid strychnine** concentrate for the control of severe infestations of Richardson's ground squirrels. PMRA claimed this to be a viable option in the interim since it provides more flexibility to growers in terms of cost effectiveness and timely availability of bait while research is being conducted into alternatives to strychnine.

2010

In **2010**, PMRA informed that there are products currently registered for control of Richardson's ground squirrels that include **ready to use baits containing 0.4% strychnine, zinc phosphide or chlorophacinone**. Additionally the **PMRA will continue to consider emergency registration applications for the use of 2% liquid strychnine in areas for which a critical need is identified** if such applications are received by the PMRA.

2011

In response to Alberta's Agricultural Service Board's request, the PMRA granted Alberta **emergency use registrations for 2 per cent liquid concentrate strychnine for the 2011 growing season**.

2012

The PMRA granted full registration of **2% Liquid Strychnine Concentrate on 23 February 2012**. Health Canada is a participant in a working group with stakeholders, including grower groups, provincial extension specialists, researchers and Agriculture and Agri-Food Canada to find alternative solutions to the Richardson's ground squirrel infestation in Alberta. Efforts should continue to ensure that new alternative technologies and integrated pest management strategies are available to users as soon as possible.

2020

On March 4, **2020**, Health Canada made a decision based on Re-evaluation Decision RVD2020-06 that the environmental risks associated with the use of strychnine for the control of RGS were not shown to be acceptable when used according to label directions. As a result, the **registration of products containing strychnine used to control RGS was cancelled and a 3-year phase-out period was allowed until March 4, 2023**.

https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/pesticides-pest-management/decisions-updates/reevaluation-decision/2020/strychnine.html

2021

In 2021, Alberta Agriculture Service Boards claimed that RGS continue to pose a significant threat to agricultural production and strychnine has been used to reduce the impacts of severe infestations. **As a single feed bait, strychnine is efficient and effective and allows producers to treat small area and large area infestations when other parts of their integrated pest management practices have failed.** 2% Liquid Strychnine is an essential tool in any agricultural producers integrated pest management toolbox as a consistent, effective tool in controlling RGS infestations.

2023

Health Canada suggested alternatives to strychnine that are registered to control RGS: chlorophacinone, diphacinone, zinc phosphide, and aluminum phosphide, mentioning that while these alternatives may have some limitations compared to strychnine, they were found to be efficacious against RGS during the scientific review that led to their registration. https://pub-flagstaffcounty.escribemeetings.com/FileStream.ashx?DocumentId=29771

In 2023, Health Canada claimed that in its decision to discontinue strychnine registration, Health Canada recognized the value of strychnine because it is easy to use, cost effective and manages RGS in a single feeding. **Health Canada says there are other alternatives to strychnine registered to control RGS available to users**: chlorophacinone, diphacinone, zinc phosphide, and aluminum phosphide. While these alternatives may have some limitations compared to strychnine, they were found to be efficacious against the target pest during the scientific review that led to their registration.

A 2023 report showed that research carried out in 2022 indicates there are effective alternatives to Strychnine for RGS control. The study was conducted on grasslands and pastures with high populations of RGS in south western Saskatchewan and south eastern Alberta. These products are Rozol, Ramik Green, Burrow Owl Bait, and ZP Rodent Oat Bait AG. For this study the mentioned products were applied twice**,** whereas the Zinc Phosphide products were effective with just one treatment. This study indicated that the Zinc Phosphide products can be as effective as 2% Strychnine at a much lower cost. Timing of application is key to success with any product but especially with the more expensive anticoagulant types.

- The full research detail and results are available on the Saskatchewan Ministry of Agriculture website: https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/livestock/pastures-grazing-hay-silage/control-of-richardson-ground-squirrel