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Consumer Product Safety

Evaluation of Incident Report 2007-5671

Background

Health Canada's Pest Management Regulatory Agency (PMRA) collects incident reporting data under the authority of the *Pest Control Products Act*. If a pesticide manufacturer receives information about an incident involving one of their products, they are required by law to submit that information to the PMRA. All submitted incident reports are made publicly available on the Health Canada website, specifically, on the PMRA [Public Registry](#). It is important to note that the information presented in incident reports reflects the observations and opinion of the person reporting it, and does not include any assessment by Health Canada, nor does it confirm an association between the pesticide and the effects reported.

Health Canada considers the reported information to determine if there are potential health or environmental risks associated with a pesticide and, if necessary, takes corrective action. Such action could range from minor label changes to discontinuation of the product.

Incident Report 2007-5671

An incident report submitted by Syngenta Crop Protection Canada Inc. was received by the PMRA on July 31, 2007. The information contained in the incident report indicated that Gramoxone Liquid Herbicide and Princep Nine-T Herbicide were applied by a worker using a hand sprayer for six hours in an apple orchard. Gramoxone Liquid Herbicide (Reg. No. 8661) is an agricultural class product containing 200 g/L paraquat (present as dichloride) as the active ingredient; Princep Nine-T Herbicide (Reg. No. 16370) is a commercial class product containing 90% simazine and related triazines as the active ingredient.

The person presented to the hospital 4 days after applying the pesticides with apparent respiratory distress; pulse oximetry indicated 80% oxygen saturation. The person also exhibited shortness of breath (dyspnea), tachypnea, and shaking. The person was admitted to the hospital and chest x-ray and pulmonary CT scans revealed conditions of pneumonitis, pulmonary edema, pleural effusions (excess fluid accumulated in the pleural cavity) and pulmonary nodes. A pulmonary embolus was ruled out. The person was hospitalized for 12 days. In accordance with Incident Reporting Regulations classification system, this incident was classified as Human Major.

As required by the *Pest Control Products Incident Reporting Regulations*, Syngenta submitted the incident report to the PMRA and it is posted on the PMRA electronic [Public Registry](#) on the Health Canada website.

Health Canada Evaluation

The PMRA reviewed all available Canadian and US scientific data for paraquat and simazine, as well as additional reports of paraquat poisoning (from US state based programs, US poison control center data, and other international cases).

The symptoms (and timing of the symptoms) presented in this incident are consistent with paraquat poisoning. Paraquat targets primarily the lung and is highly acutely toxic via the oral and inhalation routes. Acute pulmonary edema and early lung damage may occur within a few hours of exposure, while the delayed toxic damage of pulmonary fibrosis most commonly occurs 7-14 after exposure. Cough, dyspnea, and tachypnea usually appear 2-4 days following exposure, but may be delayed as long as 14 days. Progressive cyanosis and dyspnea reflect deteriorating gas exchange in the damaged lung. In some cases, the coughing up of frothy

sputum (pulmonary edema) is the early and principal manifestation of paraquat lung injury (Recognition and Management of Pesticide Poisonings, Fifth Edition, 1999).

The PMRA evaluation concluded that it is **probable** that the effects noted in this incident report were related to exposure to paraquat (Gramoxone Liquid Herbicide, Reg. No. 8661), either by inhalation, ingestion, or secondary ingestion via inhalation (i.e., swallowing of particles taken into the nose and mouth through breathing).

Health Canada Conclusion

In a review of paraquat incident reports in the US (Poison Control Center data 1993-1998), the Environmental Protection Agency found that inhalation can be a significant risk for symptoms of paraquat intoxication. It was concluded that although the evidence in the literature is contradictory, nasal exposure to non-respirable droplets of paraquat could cause serious and perhaps fatal poisoning by paraquat. The review concluded that some type of mask to keep droplets away from the mouth and nose should be recommended (Blondell, Jerome. Review of Paraquat Incident Reports Involving Inhalation; DP Barcode D260797. August 10, 2000).

Based on the acute toxicity of paraquat, additional scientific information, and similar cases of paraquat poisoning in the US and other countries, a decision was made by the PMRA to update the Gramoxone Liquid Herbicide (Reg. No. 8661) label to add the statement "Fatal if inhaled" and to require the use of a respirator for applicators and other handlers, mixers, and loaders.

More information about the [Incident Reporting Program](#) is available on Health Canada's website. Questions about this evaluation can be addressed to the [Pesticide Incident Reporting Program](#).

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