

Crisis of eggs contaminated with fipronil : contribution of the Poison Control Centres

On 20 July 2017, the Belgian authorities informed the EU Member States and the European Commission via the Rapid Alert System for Food and Feed (RASFF) of the presence of fipronil in eggs and poultry meat, detected during checks in various production facilities. These products had been exported to many countries in Europe and beyond. The first alert concerning the export of contaminated products to France was issued by the Netherlands on 5 August.

Fipronil is an insecticide active substance that is no longer approved for plant protection use in Europe; it has approval as a biocidal active substance (product type 18: insecticide and acaricide) and as a veterinary antiparasitic for the treatment of pets. However, it is not authorised as a medicine for treating livestock intended for human consumption. So-called "natural" plant-based pest control products containing fipronil, marketed under the names DEGA 16 and COOPER BOOST, had been used in poultry farms in the Netherlands and Belgium, both as an environmental spray during fallowing and directly on the animals for antiparasitic treatment, resulting in contamination of eggs and meat from these animals and consequently, consumer exposure.

Fipronil is a neurotoxic substance that interferes with the normal inhibitory action of gamma-aminobutyric acid (GABA) receptors, resulting in excessive neuronal excitation. It is classified as toxic by ingestion, dermal contact and inhalation, as well as by repeated exposure due to its neurotoxicity. Toxicovigilance data collected from humans in the workplace¹ show that the effects resulting from acute exposure to preparations containing fipronil are usually mild. In the case of eye splashes, skin contamination or exposure to aerosols, the only disorders observed are generally mild signs of local irritation. In view of fipronil's mechanism of action and experimental

data, the effects expected in the event of acute systemic poisoning are neurotoxic, mainly with convulsions.

On 7 August, ANSES was asked by the Ministries of Agriculture, Health and Consumer Affairs to assess the risk to consumers exposed to fipronil in light of the concentrations observed in contaminated eggs. Alongside the conventional risk assessment, which was based on estimating the ingested dose of fipronil according to the type of food then comparing this to the ARfD² of fipronil, ANSES asked the network of French Poison Control Centres (PCCs) to conduct a study of cases of human exposure to fipronil reported to them.

A search for commercial mixtures containing fipronil was conducted in the National Database on Products and Compositions (BNPC) of the PCCs' information system (SICAP)³: 88 agents containing fipronil were identified.

Cases of exposure to these agents between 1 January 2011 and 30 June 2017 were extracted from SICAP. This found 356 cases of accidental symptomatic poisoning with non-null causality⁴. The analysis focused on the 107 cases of oral poisoning, because cases of exposure via the dermal and/or ocular route alone were not relevant for a risk assessment of fipronil in foodstuffs.

Around half of cases concerned children under 10 years of age (52.3%). The vast majority of poisonings were of low severity (95.3%). Only four cases were of moderate severity (4.7%), three of which concerned children. No cases of high severity were found.

For these 107 cases, various symptoms were reported such as vomiting (36%), oropharyngeal irritation (33%), abdominal pain (20%) and diarrhoea (11%).

1. <https://www.anses.fr/fr/system/files/RCCP-Ra-Fipronil.pdf>

2. The acute reference dose (ARfD) is the maximum amount of active substance, expressed in mg/kg body weight, that can be ingested by the consumer in food or drinking water over a short period, i.e. during a meal or a day, without any adverse effect on health.

3. When a call is received by the toxicology emergency telephone hotline (RTU) of a poison control centre, a medical record is created. This contains information on the person(s) exposed, the agents involved, the routes of exposure and the symptoms, among other things. It is coded with an agent from the BNPC and then recorded in the National Database of Poisoning Cases (BNCI). These two databases form the PCCs' Information System (SICAP).

4. Causality established according to the method for determining causality in toxicovigilance (Version 7.6 - June 2015), which determines, using five levels (causality excluded I0, unlikely I1, possible I2, likely I3 and very likely I4), the strength of the causal link between exposure to an agent and the occurrence of a symptom, syndrome or disease https://tv.toxalert.fr/v7.6/Calcul_imputabilite_v7.6.html

In 51 cases, the products concerned were biocides for the eradication of insects, while 52 cases concerned commercial veterinary products. For four cases, the category was unknown.

Analysis of these data showed that accidental acute oral poisonings with doses more than 10 times the ARfD, set at 0.009 mg/kg body weight, did not result in systemic and neurological effects. However, PCC dossiers only concerned cases of acute exposure, and there were no cases of chronic exposure.

This example demonstrates the importance of the data collected continuously by poison control centres as part of their emergency telephone hotline activities, and their ability to rapidly provide observed evidence of the human toxicity of a product or substance by querying their information system.

These human toxicity data are an invaluable complement to the opinion that ANSES issued on 10 August 2017 on the acute risk to human health from fipronil in eggs intended for consumption.

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TO FIND OUT MORE, VISIT:

[ANSES Note on a request for scientific and technical support \(STS\) regarding the health risk assessment concerning the presence of fipronil in eggs intended for consumption](#)

[STS note on the maximum concentration of fipronil not to be exceeded in egg products and other processed products containing eggs, to ensure that consumer exposure remains below the acute toxicological reference value](#)