

Series of poisonings by metam-sodium fumes in Maine-et-Loire

The facts

In September and October 2018, three consecutive episodes of multiple poisoning affected a total of around a hundred people in Maine-et-Loire. The first one, in late September, concerned a vocational high school, while the second, in early October, affected agricultural workers in a plant nursery and walkers in Brain-sur-l'Authion, a municipality located near the vocational high school. The third episode affected walkers in the municipality of Mazé-Milon. Each time, the victims suffered similar symptoms such as respiratory tract or eye irritation, or vomiting, and some of them had to be admitted to Angers university hospital.

These poisoning cases were quickly attributed to plant protection products containing metam-sodium used for disinfecting soil in greenhouses and market garden plots between crops. When in contact with water, metam-sodium releases methyl isothiocyanate (MITC), which has fungicidal, nematocidal and insecticidal properties. Immediately after the product has been applied, it must be watered to ensure it migrates deep into the soil, then the treated ground must be covered with a tarpaulin to limit dispersion of the MITC and optimise the effectiveness of the disinfection. In addition, a "re-entry interval" must be observed before anyone can return to the treated plot.

The particularly hot and dry weather conditions of early autumn 2018 favoured the evaporation of metam-sodium and its dispersion in the surrounding area. This then exposed people nearby, in areas where market garden crops were grown adjacent to housing. It was also found that some users had not complied with the conditions of use for this type of product, failing to water the ground or cover the soil, or applying at temperatures above 25°C.

Local emergency management measures

Following this series of poisonings and to prevent their re-occurrence, on 12 October 2018 the Prefect of Maine-et-Loire decided to ban the use of products containing metam-sodium for 15 days as a precautionary measure, pending the results of investigations. This ban was then extended until 31 December 2018, after it was found that the techniques for using metam-sodium were not being properly applied.

Regulatory re-assessment of products containing metam-sodium

At the same time, in autumn 2018, following the re-approval¹ of metam-sodium at European level, ANSES was re-examining all products containing this active substance with a view to renewing their marketing authorisations. At the end of this re-assessment, it was found that the uses claimed by the manufacturers did not comply with the regulatory requirements, due to the existence of various risks: for farm workers entering an area after treatment, for people in the vicinity of treatments and for groundwater.

Outcome

In view of the unfavourable conclusions of the regulatory assessment of metam-sodium products, ANSES decided to withdraw the marketing authorisations for all products containing this substance. The series of poisonings that occurred in Maine-et-Loire simply reinforced this decision, which would have been taken anyway.

Moreover, a search for similar cases in the poison control centres' national database showed that there had already been numerous earlier poisonings attributed to metam-sodium, to the point that the prefect of Maine-et-Loire had previously been required to issue a prefectural order on 20 January 2017. These cases had not specifically been reported to ANSES and its phytopharmacovigilance scheme [1].

Improving feedback for phytopharmacovigilance

This episode illustrates the importance of reporting to ANSES any adverse event associated with the use of plant protection products, whether serious, benign, localised or generalised. Moreover, the reporting of adverse effects is a regulatory requirement for professionals, pursuant to Article L. 253-8-1 of the French Rural and Maritime Fishing Code. But any individual or healthcare professional can also report adverse events via the reporting portal. These phytopharmacovigilance reports enable the Agency to act promptly to prevent and control risks.

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References

[1] https://vigilances.anses.fr/sites/default/files/VigilancesN3_Pr%C3%A9sentationPPV.pdf

1. In the European Union, active substances used in plant protection products must undergo periodic re-assessments of the risks to human health, the environment and non-target organisms. At the end of this process, the active substance is either "re-approved" for a certain period of time or banned.