

## Alert concerning snake bites during summer 2016

In late July 2016, a pharmacist at the La Roche-Sur-Yon hospital in the Vendée *département* was concerned that three people in that month alone had been brought to the emergency department after being bitten by land snakes. To confirm this signal, ANSES and the network of Poison Control Centres (PCCs) studied cases of land snake bites for which a PCC<sup>1</sup> had been called since 2012.

The monthly distribution of bite cases showed a strong seasonal pattern, from April to September each year, corresponding to the emergence of land snake species from hibernation: about 90% of the cases observed in any year occur during this period. The number of cases observed in July 2016, the month when the alert was raised, was similar to the number observed in July 2013, and higher than that observed in July of the previous two years (Figure 1).

These results therefore confirmed the signal and the alert issued in July 2016.

The precise species of land snakes responsible for these bites are often difficult to determine, as the walkers who are bitten do not get a clear view of the animal, and/or cannot recall the information necessary to describe it. As an example, of the 369 cases of land snake bites reported to PCCs in 2016, 61% and 8% respectively were due to a viper or colubrid, with the remaining cases being due to an unspecified snake.

A regional analysis showed that the Pays de la Loire region, which encompasses the Vendée, was indeed the most affected region in 2016, with 20.5% of all land snake bites observed by PCCs between January and July, whereas this region accounted for only 6.3% of poisoning cases all agents combined during the same period.

For the cumulative period 2012 to 2016, the Pays de la Loire region had the highest incidence of land snake bites observed by PCCs (6.8 cases/105 inhabitants), followed by Centre Val-de-Loire (5.2 cases/105 inhabitants), Aquitaine Limousin Poitou-Charentes (4.6 cases/105 inhabitants) and Languedoc-Roussillon - Midi-Pyrénées (4.4 cases/105 inhabitants). While not exhaustive, this regional distribution of land snake bites observed by the PCCs seems representative, at least for the

most serious bites, given that PCC toxicology experts are the first to be contacted to assess whether or not an antidote needs to be administered (see below). The geographical gradient of the regions most at risk, increasing from the north to the south of France and becoming more pronounced south of the Loire, raises the question of the changing geographical range of these indigenous species, linked to meteorological factors at least.

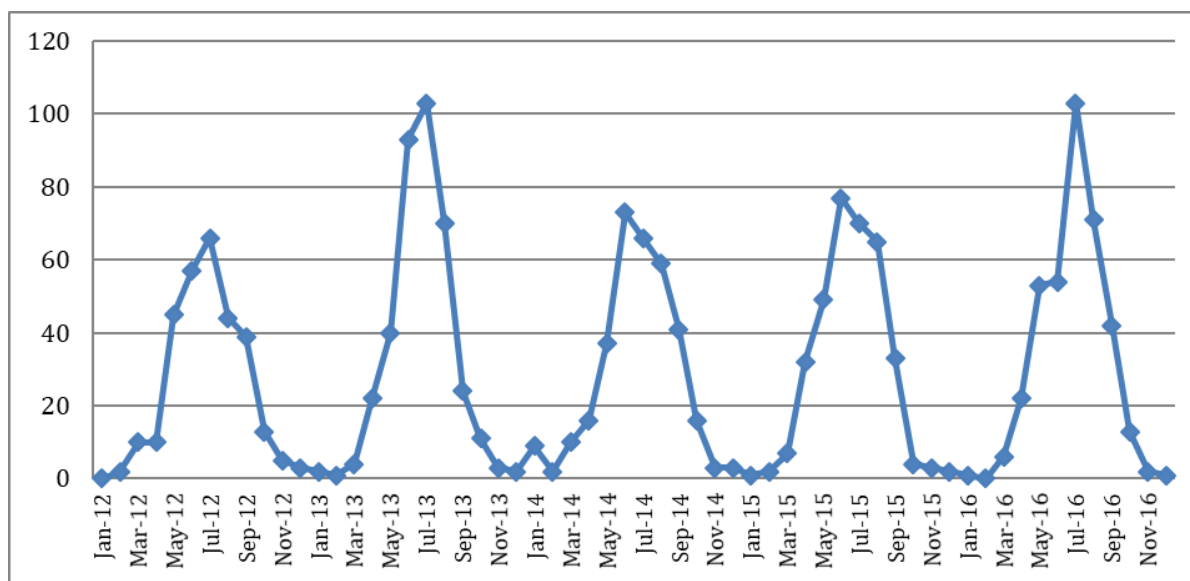
Following the analysis of this signal, ANSES alerted the Ministry of Health on 3 August 2016, due to the issue of venom antiserum availability in hospital departments and a possible shortage of antidote.

This is because some viper bites (but not colubrid bites) cause envenomation. Besides the mark of the fangs, which by itself does not necessarily mean an injection of venom, this results in sharp pain and local oedema (swelling, redness, heat, etc.). In the most severe cases (grades II and III), the oedema may extend beyond the bitten area and the patient may develop general complications requiring hospital care and antivenom immunotherapy. Viperfav<sup>®</sup> is an antidote to the venom of the European asp (*Vipera aspis*), European adder (*Vipera berus*) and horned viper (*Vipera ammodytes*), which has been on the market since 1999 and is well tolerated by patients. Follow-up of the medical care of bite victims, carried out by the PCCs, showed that antivenom therapy had been administered in more than a third of the 369 cases of land snake bites reported from January to December 2016.

Pressure on stocks of the Viperfav<sup>®</sup> antidote had been reported by the French Health Products Safety Agency (ANSM). During the summer 2016 alert, distribution of residual stock was subject to quotas and was reserved by the manufacturer Sanofi for emergencies, with inter-hospital exchanges prioritised.

An antidote location and management tool called Slogan<sup>®</sup> was made available in late 2015 by the Toulouse PCC and the Midi-Pyrénées regional emergency observatory (ORU-MiP). Slogan<sup>®</sup> is a secure computer application designed mainly for professionals in PCCs and hospital in-house pharmacies.

1. Each of the nine PCCs records in their shared information system (SICAP) the details of the calls it receives from individuals or healthcare professionals. This system comprises the National Database of Poisoning Cases (BNCI) and the National Database on Products and Compositions (BPNC), which reference the names and, if applicable, the composition of all agents (plants, animals, fungi, chemicals, medicinal products, etc.) associated with these cases.



**Figure 1.** Monthly distribution of land snake bites observed by PCCs in metropolitan France between 01/01/2012 and 30/10/2016 (Source: SICAP)

It enables the tracking and tracing of some 15 antidotes, including Viperfav®, providing for each one the number, location and expiry dates of vials in health establishments within a particular region. The PCC doctor can therefore refer the viper poisoning victim to the nearest facility with the appropriate antidote, or send the antidote to the hospital where the victim has been admitted. In mid-2016, this scheme included some 50 establishments in several different regions. Following this summer's alert, the possibility of extending the scheme to the entire country is being studied by the Ministry of Health.

The signal of an increase in land snake bites and its prompt analysis by the members of the toxicovigilance network ensured that health authorities were alerted at the time of the summer peak, and guaranteed the efficient distribution of venom antiserum in line with health needs. Bites, especially from vipers, can be serious and lead to complications. While antivenoms exist, their cost and availability are such that good regional management is vital.

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