

Exercise caution with the products used to eradicate bed bugs

Besides the physical and psychological consequences of bed bug bites, the products used to eradicate them can cause poisoning! A case study conducted by poison control centres between 2007 and 2021 found 1056 cases of exposure to bed bug control products, including 12 cases of severe poisoning. Serious cases were more common with banned substances and included the death of a child. Here is a reminder on the recommendations in the event of infestation.



Bed bugs are small insects that live on blood and bite humans during the night, causing itching and local allergic reactions, not to mention the psychological consequences of this infestation of the home.

Bed bugs are transmitted through clothing, luggage or furniture when travelling or buying items second-hand. They are most often found in mattresses and bed frames, but also in skirting boards, electrical sockets, cracks, etc. [1].

An Ipsos study¹ estimated that 7% of the French population may have been affected between 2016 and 2020. All socio-professional categories seem to be almost equally concerned.

Bed bugs are particularly tenacious as their life expectancy, even without feeding, can exceed one year. In addition, a female lays five to fifteen eggs per day, resulting in very rapid multiplication when no action is taken [2].

Eradicating these pests can therefore be particularly difficult and victims may resort to all sorts of methods, some of which are ineffective or even dangerous.

To better understand the circumstances leading to poisoning, cases of exposure to products used to control bed bugs, recorded in French poison control centres from 1999 to 2021, were analysed.

A steady rise in exposure from 2010, halted by the COVID-19 pandemic

The first case of exposure to a bed bug control product identified in the poison control centres' database (SICAP) dates from 2007.

Then from 2007 to 2021, the database recorded 1056 people exposed to such products.

The number of cases started to increase from 2010, even more sharply from 2016 onwards, before falling in 2020 and 2021 (see Figure 1). This decline could be linked to the COVID-19 pandemic, which led to a slowdown or even a complete halt in national and international tourist travel, which is a vector for the spread of bed bugs. The majority of cases occurred in the summer and concerned mainly women. The median age was 35 years.

Following exposure to these bed bug control products, 75.5% of people who called a poison control centre (n=797) experienced symptoms. These were mainly ENT and respiratory symptoms (breathing difficulties, coughing, oropharyngeal pain or irritation), skin symptoms (itching, skin irritation), headache, dizziness and abdominal pain.

The products involved

People who contacted a poison control centre were mainly exposed via insecticides of the pyrethrin or pyrethroid classes (53.5%). In 27% of cases, the type of insecticide was not specified, half the time because the insecticide had been applied by a professional and the exposed people did not know the product reference used.

Massive (clearly greater than recommended) or repeated use was reported in 10.8% of cases.

[1.https://badbugs.cdn.prismic.io/badbugs/708ae86d-9406-495f-a4c1-9e21c3612346_Les+Franc%CC%A7ais+face+aux+nuisibles+-+Ipsos+pour+Badbugs.fr+-+Aout+2022.pdf](https://badbugs.cdn.prismic.io/badbugs/708ae86d-9406-495f-a4c1-9e21c3612346_Les+Franc%CC%A7ais+face+aux+nuisibles+-+Ipsos+pour+Badbugs.fr+-+Aout+2022.pdf)

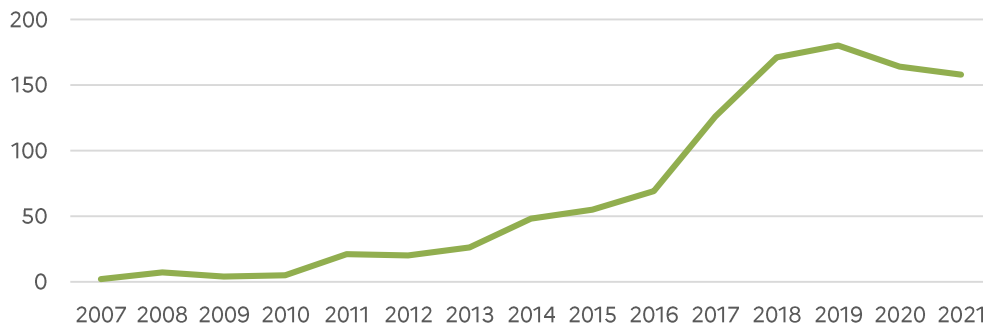


Figure 1: Number of exposures to products used to control bed bugs per year. (Source: SICAP 2007-2021).

The study also revealed the use of substances that have been banned for this purpose in 4.2% of cases (n=44). These were, from most to least common, dichlorvos, malathion, aluminium phosphide and rotenone. The products containing these substances had been imported from abroad, purchased on the internet or from street vendors.

Exposure mainly during application of the product

Exposure was either "direct", i.e. occurring at the time the product was applied in 51% of cases, or "indirect", occurring when the person returned to the treated premises in 39% of cases (the type of exposure – direct or indirect – was undetermined in 10% of cases).

With the poisoning on return to the treated area ("indirect"), 46% of victims said they had complied with the prescribed re-entry time².

Conversely, 11% admitted that they had not observed this interval. Information was missing in 43% of cases.

When the re-entry time was not observed, the reasons given were as follows:

- lack of information about the treatment of premises: employees not informed about the treatment of their workplace, people staying in collective accommodation (hostels, student rooms, hotels) unaware that the rooms had been treated;
- urgent need to return during treatment due to something being left behind in the premises (keys, another object, pet), or due to an alarm or smoke detector being triggered;
- wilful or forced (in the case of occupational exposure) non-compliance with instructions.

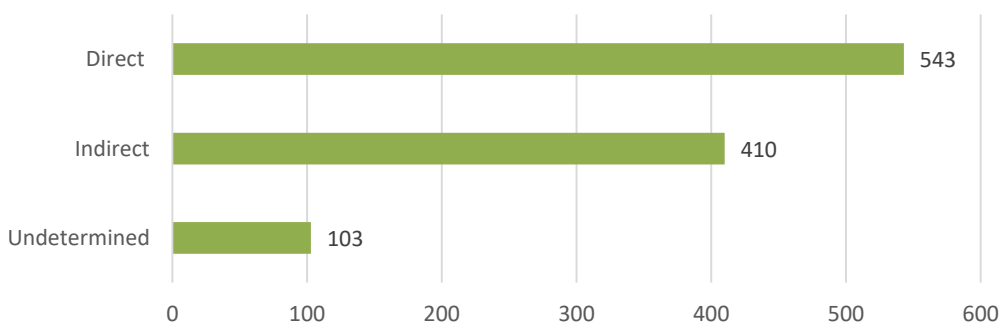


Figure 2: Distribution of cases by type of exposure (all agents combined). (Source: SICAP 2007-2021).

2.The re-entry time is the period between application of a product and the return to the treated area. It is very important to comply with this period, in order to avoid the risk of poisoning.

Some serious and even fatal poisoning cases

Products used to control bed bugs were responsible for 12 serious cases: nine cases of moderate severity, two high-severity cases and one death. These serious cases (moderate or high severity) and the one death accounted for 1.1% of all cases (n=12).

Exposure was respiratory and/or dermal. Respiratory, digestive, neurological and/or cardiac symptoms were observed. Some people had a history of respiratory disease that may have aggravated their symptoms.

Of the 12 people who were seriously poisoned, five were children. One of these children died as a result of inhaling phosphine released by a product containing aluminium phosphide (CELPHOS®), which is banned in France. This illegally imported product had been sprinkled in a bedroom occupied by two children and a young woman. All three presented with digestive symptoms, complicated by myocardial damage in the two children, causing the death of one of them.

Lastly, serious cases were more common with substances that have been banned for this use. Thus, 9.1% of serious cases or deaths (4/44) involved prohibited substances, compared with 0.8% (8/1012) involving non-prohibited or unspecified substances.

In addition to bites and acute poisoning...

Bites and poisoning from bed bug control products are not the only consequences of an infestation [3]. In some patients who visited an occupational and environmental disease consultation centre after their call to the poison control centre, major psychological consequences were observed. Some of these manifestations, such as sleep disturbances, a permanent state of alertness sometimes amplified by the persistent smell of the product used, and an obsessive fear of re-infestation, can be likened to post-traumatic stress.

References:

[1] <https://solidarites-sante.gouv.fr/sante-et-environnement/risques-microbiologiques-physiques-et-chimiques/especes-nuisibles-et-parasites/article/punaises-de-lits>

[2] <https://www.sentiweb.fr/document/5008>

[3] https://www.anses.fr/fr/system/files/CNEV-Ft-Sept2015-Rapport_Punaises_de_lits_en_France.pdf

Avoidable accidents

To eradicate bed bugs, it is advisable to begin with mechanical and thermal control. All surfaces should be meticulously vacuumed and the vacuum bag disposed of, and clothes and linen should be machine washed at temperatures above 55°C or placed in a freezer at a temperature below -17°C for 72 hours. Chemical control should only be used if these other methods fail.

Recommendations in the event of infestation [1]:

- favour non-chemical means initially; these are listed on the Ministry of Health's website;
- limit the insecticide products you apply yourself. Inexperienced people find it very difficult to resolve their bed bug problem and tend to repeat the use of insecticides, which increases their exposure;
- if you choose to use chemicals yourself, ensure that you comply with the recommended conditions of use (product quantity, number of applications, re-entry time);
- never use products that are banned in France: only buy products through conventional channels and not on the internet or from clandestine markets that sell products illegally imported from abroad;
- if you call on professionals, follow their instructions regarding the re-entry time.

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