Transferring household products to unsuitable containers is a very poor practice responsible for serious accidents every year

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From 2017 to 2021, French poison control centres (PCCs) received more than 6000 calls a year about accidents involving decanting, mainly cleaning products decanted into water bottles.
Half of all people experienced symptoms following accidental ingestion. One hundred and eight of these poisoning cases, of which almost 18% involved patients under the age of 15, were very serious, with digestive lesions. Twenty-four people suffered sequelae, and five died.
Products should never be decanted due to the risk of no longer knowing what is in the new container. If decanting is unavoidable (e.g. product to be diluted or purchased in bulk), in addition to the precautions taken during transfer, a label should be affixed to the new container.

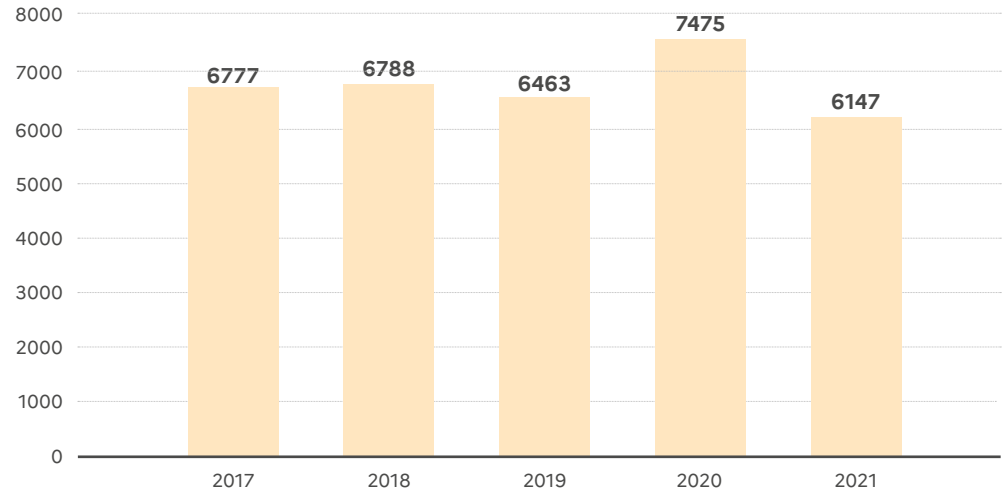
MORE THAN 6000 AVOIDABLE ACCIDENTS EVERY YEAR

Each year, PCCs receive more than 6000 calls about accidents due to the decanting of products, i.e. transferring a product into a container other than the original one that is not intended for this purpose. This may involve transferring a product from a large bottle to a smaller container, diluting a pure product in a larger container, bringing home a professional product (that may be highly concentrated) in an unsuitable container, etc. The new containers, usually objects intended for food use such as water bottles, no longer carry any information about the nature of the contents, potential chemical risks (no labelling, risk phrases, or hazard symbols) or precautions for use, and no longer have a safety cap.

An analysis of calls to the PCCs revealed 33,650 accidents due to decanting between 1 January 2017 and 31 December 2021.

Figure 1 – Annual breakdown of cases of exposure due to decanting reported to the PCCs between 1 January 2017 and 31 December 2021

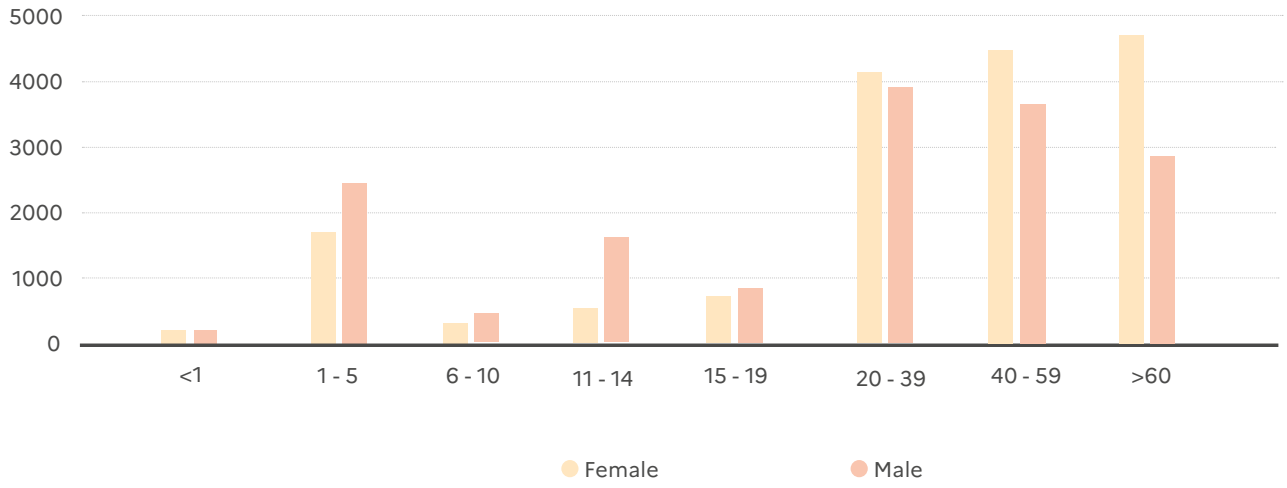
(Source SICAP)



With the exception of 2020, which was characterised by a higher number of cases (N=7475), the annual breakdown was stable, fluctuating between 6147 cases in 2021 and 6777 in 2018. The patients' ages ranged from less than one to 104 years old, with a median age of 39 years. Nearly 22% were under 15 years of age. The M/F sex ratio was 0.9.

Figure 2 – Breakdown by age group and sex of cases of exposure due to decanting reported to the PCCs between 1 January 2017 and 31 December 2021

(Source SICAP)

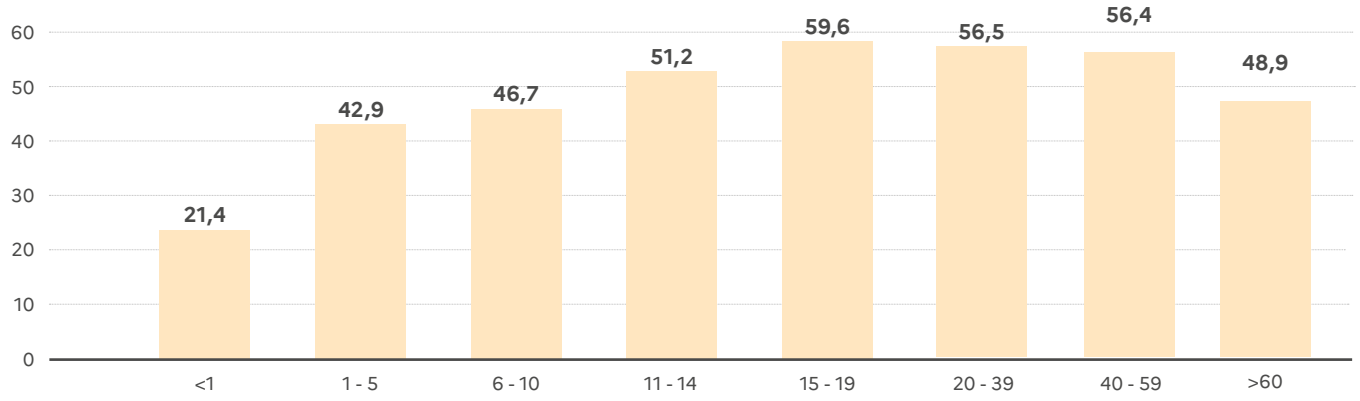


When information was provided in the dossiers (95% of cases), the predominant route of exposure was oral (97.6%), corresponding to accidental ingestion of the decanted product. Accidents by other routes were reported more rarely: 1.2% occurred via dermal exposure, 0.9% respiratory and 0.1% eye exposure.

Irrespective of the route, half of the cases (51.3%) were symptomatic. Figure 3 shows the age distribution of exposed people and the percentage of symptomatic cases. Children under six years of age accounted for almost 15% of cases, although 60% of them were asymptomatic at the time of the call (compared with 46% of those over the age of six). This phenomenon is seen with all types of exposure; parents are very ready to call a poison control centre about their child even if they have no symptoms or exposure was not certain.

Figure 3 – Age distribution of the percentage of symptomatic cases due to decanting reported to PCCs between 1 January 2017 and 31 December 2021

(Source SICAP)



HOUSEHOLD PRODUCTS TOP THE LIST

Most of the accidents were due to the decanting of commercial mixtures, i.e. household products (79.3%), followed by plant protection products (6.2%) and chemicals such as ammonia (4.8%) (see Table 1).

Table 1 – Product categories accounting for at least 1000 accidents due to decanting

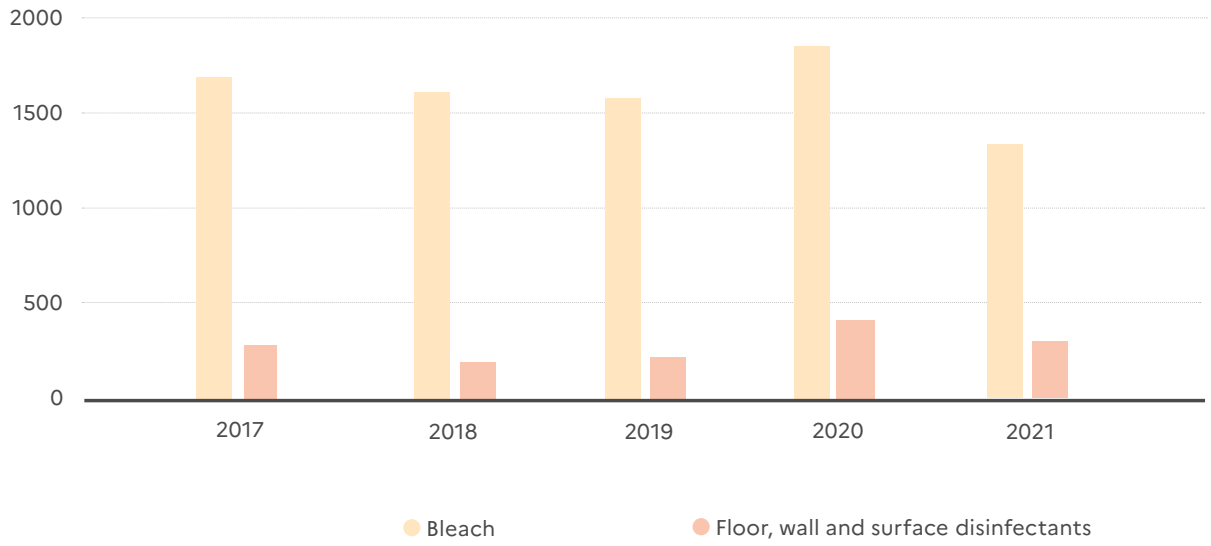
(Source SICAP)

PRODUCT CATEGORIES	NUMBER OF CASES	PERCENTAGE
Commercial mixture	26 675	79,3
Plant protection product	2 099	6,2
Chemical	1 600	4,8
Drugstore product	1 295	3,8
Food or dietetic product	1 194	3,5

Accidents due to the decanting of disinfectant products, i.e. products with a biocidal action, accounted for 36.3% of cases, 59.2% of which were symptomatic. Figures for this product category were stable over the study period, with the exception of 2020, which saw an increase, probably due to the COVID-19 epidemic and the greater use of disinfectants such as bleach sold in large volumes or in packs for dilution (see Figure 4).

Figure 4 – Annual breakdown of cases of exposure due to the decanting of bleach and disinfectants for floors, walls or surfaces reported to PCCs between 1 January 2017 and 31 December 2021

(Source SICAP)



In the category of drugstore products, accidents due to the decanting of hand sanitiser accounted for 51.6% of cases, of which 41.9% were symptomatic. These accidents rose sharply in 2020 and 2021, as these products were widely used during the COVID-19 pandemic.

SERIOUS CASES THAT CAN LEAD TO MAJOR SURGERY AND SEQUELAE

Of the 17,250 symptomatic cases, 93% (N=16,042) were mild, 6.4% (N=1100) were moderate and 0.6% (N=108) were serious, including five deaths.
In the serious cases, the patients ranged in age from one to 77 years (median 40 years), with 18% being under the age of 15. The sex ratio was 2.5, indicating a high preponderance of males compared with the sex ratio for low and medium severity cases, which was 0.9.
The decanted products were mainly cleaning, maintenance,

stripping or descaling products (59% of cases), materials treatment products such as moss killer (12%), food contact products and disinfectants.

When the information was available (63%; 68 cases out of 108), the products had been decanted into a water, soda or fruit juice bottle, or into a glass. Most of the time, the family or friends of the victim were responsible for this decanting (69%; 25 cases out of 36 reported). On the other hand, very little information was available about the original container before the product was decanted (cans holding several litres, pods, bottles), where the decanted product was stored, the reason for decanting (dilution needed, shared between several people, initial container too large), or whether the secondary container was labelled.

Endoscopies showed digestive lesions in 93% of patients, mainly of the oesophagus (94%) and stomach (83%). Twenty-four people suffered sequelae, mainly stenosis of the oesophagus (21 cases), pylorus (two cases) or stomach (one case), requiring surgery and the introduction of parenteral nutrition (by infusion) for some patients.

SERIOUS CASES ALSO AMONG CHILDREN

The 108 serious cases included 18 children under 15 years of age (13 boys and five girls), nine of whom were under the age of five. The decanted products involved were mainly cleaning products (N=7) and paint strippers (N=5).

When the information was available (N=13), the product responsible for the poisoning had been decanted into a water bottle in eight cases, a soda bottle in three cases and a glass in two cases. In 10 cases, the decanting had been carried out by the child's relatives or carers. In one case, the soda bottle had been given to the family in a restaurant and in another, the child had found the soda bottle in the street near a vehicle workshop. In six cases, information on the person who carried out the decanting was unavailable.

Endoscopy results were available for 15 children. Fourteen had lesions of the oesophagus and stomach. Eight children developed secondary oesophageal stenosis, one of whom required removal of the damaged part of the oesophagus.

FIVE DEATHS!

Between 1 January 2017 and 31 December 2021, five people died as a result of ingesting a decanted product:
- One child under the age of five drank a decanted liquid from a soda bottle found in the street. Although the product could not be precisely identified, a pH strip test carried out at the hospital indicated that it was an acid product.

- Two people aged over 80 and suffering from dementia or Alzheimer's disease ingested products that had been decanted into water bottles.

- Two adults in their sixties ingested disinfectants for food contact surfaces, one decanted into a water bottle and the other into a new, unspecified container.

DECANTING OF AMMONIA SPECIFICALLY FOR THE MANUFACTURE OF NARCOTICS

Ammonia solution has many uses, both domestic and professional, for its detergent, stripping and descaling properties. Accidental or intentional ingestion of this caustic product can be serious. Thirty-seven of the 108 serious cases mentioned above were due to ammonia decanting. They involved 28 men and seven women (sex ratio of 4), with a median age of 39 (from 8 to 58 years).

Ammonia decanting accidents are particularly common among cocaine users, who misuse the chemical to make crack or freebase. In this study, 13 cases (35%) mentioned a context of cocaine use. The victim was not always the person who had decanted the product into another container and was not necessarily a cocaine user. Nine patients were cocaine users, seven of whom had explicitly confirmed when they called the PCC that they were using ammonia to make crack. In two cases, the users had decanted the product themselves, in two others it had been carried out by a third party, and in the remaining five cases the information was not provided.

The decanting container was mentioned in ten dossiers: methadone bottle (N=3), water bottle (N=3), beer bottle (N=3) and plastic bottle (N=1).

RESULTS BACKED UP BY OTHER STUDIES

In Italy, the Rome poison control centre found the same trends, confirming the increase in the number of accidents due to decanting in 2020 compared with previous years. During the pandemic, the recommended disinfection measures led to individuals making hand sanitiser at home and keeping it in unsuitable containers, purchasing it in large quantities and then transferring it into small containers, or taking decanted products home from the workplace [1].

The Marseille PCC compared domestic accidents caused by products brought back home from work with those caused by consumer products between 1993 and 1998. The poisonings differed little: the clinical development, the percentage of lesions observed from the endoscopy and the length of the hospital stay were not significantly different in the two groups [2]. It should be noted that the professional or industrial use of a product does not constitute a severity criterion, since some of these products have the same composition as certain detergents or cleaning products intended for the general public.

TO AVOID THE AVOIDABLE, IT'S TIME TO CHANGE PRACTICES

Based on this study's key findings, the following recommendations were made for reducing the risk of accidents due to decanting:

- Keep products in their original packaging, unless this is impossible.

- Never decant products (brought home from work or purchased in a supermarket): not only do you risk forgetting what is in the new container, but you also lose valuable information such as the name of the product and the instructions and precautions for use. Moreover,

in the event of poisoning, this information enables poison control centres or doctors to make an accurate assessment of the toxicological risk.

- If decanting is necessary, for example when a product is sold in refill packs to be diluted, the product should be transferred to a container suited to its chemical nature, with a safety cap for hazardous products. Affix a label clearly indicating the name of the original product and whether it has been diluted. The unique formula identifier (UFI) of the decanted product should be photographed: this 16-digit code, placed next to the trade name or hazard information, enables PCCs to identify the commercial reference and its composition.

- For products purchased in bulk, use an appropriate container (the original one if possible), then affix the label provided by the store or write all useful information on a new label (product name, precautions for use and batch number, for example).

- Never put household products in the refrigerator, and keep them in a separate place from food and drink.

- Store products carefully, whether or not they have been decanted, out of the reach of children and preferably in a locked cupboard.

If accidental ingestion occurs despite all these measures, immediately dial:

o 15, 18 or 112 (114 for the hearing impaired),
o or +33 (0)1 45 42 59 59
(24/7 emergency number in France)
to contact a poison control centre.

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[2] Virey-Griffaton E, de Haro L, Prost N, Valli M, David J.M, Arditti J. 2000. *Accidents domestiques par produits industriels dérobés en entreprise. Expérience du centre antipoison de Marseille de 1993 à 1998 inclus.* [Domestic accidents involving industrial products stolen from companies. Experience of the Marseille poison control centre from 1993 to 1998 inclusive.]

FIND OUT MORE:

ANSES. 2024. Accidents due to product decanting. Study of cases reported to poison control centres between 1 January 2017 and 31 December 2021. Internal Request No 2022-AUTO-0058