

# "CheniPRO": a study of the occupations most exposed to processionary caterpillars



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Because they often work in contact with oak or pine trees, timber and forestry professionals, workers maintaining or developing green spaces, and equestrian professionals are particularly at risk of exposure to the stinging hairs of processionary caterpillars. Timber and forestry professionals such as silviculturists, lumberjacks and logging workers are the most affected by poisoning due to these caterpillars. Raising awareness of the risks and wearing personal protective equipment remain key measures for safeguarding these workers.

## PROCESSIONARY CATERPILLARS: HARMFUL TO HUMAN HEALTH

Pine and oak processionary caterpillars are moth larvae that proliferate and then defoliate the trees they colonise. They feed on the leaves after emerging from their nests of silk. Once fully developed, pine processionary caterpillars descend the trunks in single file in order to burrow into the ground, while oak processionary caterpillars remain in the colonised trees.

Both species have been classified as harmful to human health since April 2022, as their hairs can cause potentially serious inflammatory reactions in both humans and animals. These hairs are located on dorsal plates that the caterpillars open when they feel threatened. These microscopic «spears» can become embedded in the skin, eyes or respiratory tract, causing stinging reactions as they release the toxic substances they contain, mainly thaumetopoein.

Since the venom remains active even after the hairs have been shed, people can be exposed via air when handling nests (including when empty), or through contact with clothing, objects, plants or animals that have been exposed.

## RISKS DESCRIBED USING DATA FROM POISON CONTROL CENTRES

ANSES and the French poison control centres (PCCs) studied cases of processionary caterpillar poisonings that had been the subject of teleconsultations with the PCCs between January 2012 and July 2019 [1]. A total of 1022 poisonings by these caterpillars were recorded during this period. Almost all the victims reported dermal clinical manifestations (97%), along with ocular (8%) or general signs (fever, fatigue, faintness, etc.) (4%), or ear, nose and throat (3%), respiratory tract (3%) or digestive tract symptoms (2%).

Although only 2% of these poisonings occurred in the course of their work – landscaping, tree pruning, gardening or municipal work – the proportion of serious cases seemed higher among professionals (12%) aged between 16 and 55 years during the study, than among adult members of the public under 60 years of age (4%).

In order to gain a better understanding of these occupational exposures and their impact on health, ANSES conducted a specific study of the occupation types most at risk of exposure to processionary caterpillars.

**CHENIPRO, THE FIRST EVER WORKPLACE STUDY**

People working in agriculture in France, whether they are employees or self-employed, are affiliated to the Agricultural Mutual Insurance Scheme (MSA). In order to question workers in occupations most at risk of exposure to processionary caterpillars, ANSES referred to the records of the MSA’s Central Fund (CCMSA). Since processionary caterpillars are endemic to the Grand-Est region, staff from the Lorraine MSA and the Moselle Accident Insurance Fund were interviewed to identify the occupations thought to be most at risk of repeated exposure, namely those in the timber or forestry sectors, in maintaining and developing green spaces, and in the equestrian field.

In 2023, ANSES sent an electronic questionnaire to 50,000 people drawn at random from the 220,000 professionals working in one of the occupations identified and registered with the CCMSA in 2022.




The responses were analysed in accordance with the rules guaranteeing the security of personal data, after authorisation by an institutional review board.

The questions concerned the affiliate’s occupation, factors of exposure to processionary caterpillars, the occurrence of symptoms and their medical treatment, knowledge of the risk and wearing of personal protective equipment (PPE).

A total of 1026 people responded and 900 questionnaires contained enough information to be analysed (2% response rate).

Of these 900 respondents, 66% worked in green spaces, 22% were in timber or forestry occupations and the remaining 12% were equestrian professionals. The breakdown of respondents’ occupation types was similar to that of the sampling frame, with 65% of them working in green spaces, 17% in the timber or forestry sectors and 18% in the equestrian field. However, after analysis of the questionnaire the occupation type of certain affiliates was reclassified in a different category. Table I details the occupations held by respondents.

**Table 1 – Main occupations held by survey respondents, by type**

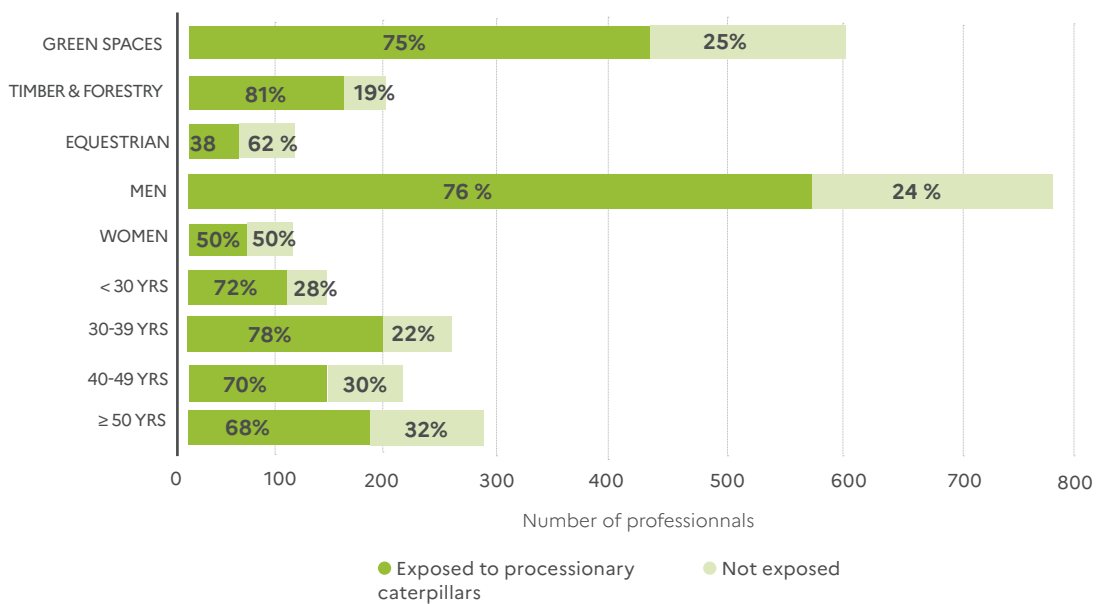
GREEN SPACES	TIMBER & FORESTRY	EQUESTRIAN
<p>Tree surgeons Tree-climbing arborists Reforestation workers Gardeners Freight drivers Workers maintaining green spaces Gamekeepers, fishing or forestry rangers Winegrowers Farmers...</p> 	<p>Skidder operators Silviculturists Lumberjacks Forest firefighters Forest managers Logging workers Sawmill workers Forestry equipment operators Logging truck drivers...</p> 	<p>Breeders Trainers Teachers, riding instructors Riders, jockeys Equine veterinarians Facility directors, managers &amp; employees Farriers...</p> 

### AN INCREASED RISK OF EXPOSURE AMONG PROFESSIONALS WORKING WITH WOOD AND IN GREEN SPACES

Of the 900 respondents, 72% (n=647) reported that they had been exposed to processionary caterpillars in the course of their work. While exposure concerned 81% of timber or forestry professionals and 75% working in green spaces, by contrast only 38% of equestrian professionals were exposed (see Figure 1).

Men, who accounted for the majority of survey respondents (85%), reported being exposed more often than women (75% versus 50%). Lastly, professionals aged between 30 and 39 were more often exposed than those over 50 years of age (78% and 68%, respectively).

**Figure 1 – Numbers and percentages of professionals exposed to processionary caterpillars in the course of their work, by occupation type, sex and age**



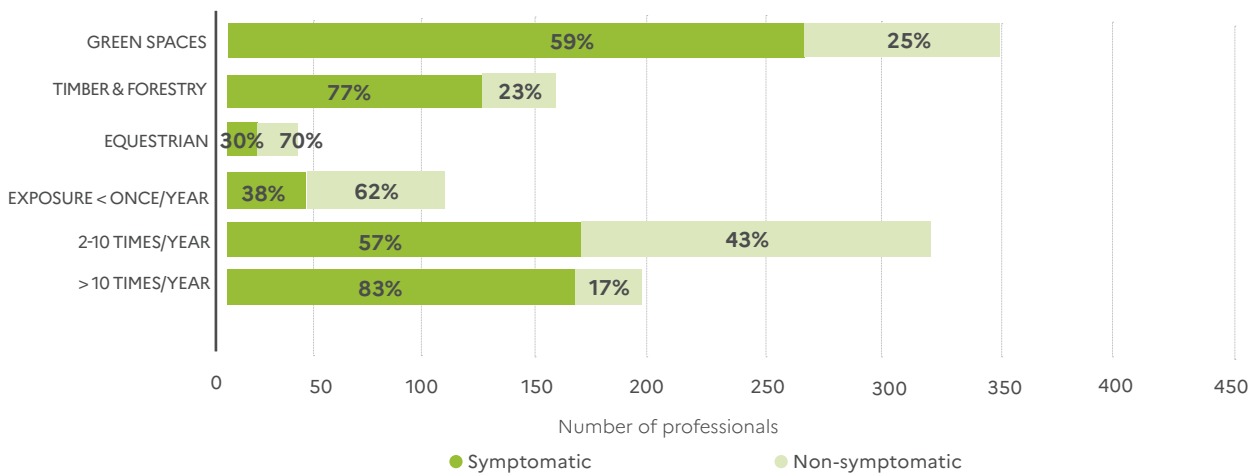
### TIMBER OR FORESTRY PROFESSIONALS AT GREATER RISK OF POISONING

As many as 62% of professionals exposed to processionary caterpillars (399 out of 647) said they had experienced symptoms at least once in the course of their work.

Timber or forestry professionals were more likely to suffer symptoms than those working in green spaces or in the equestrian field (77%, 59% and 30% respectively) (Figure 2).

The risk of symptoms increased in line with the frequency of exposure: 83% of workers exposed more than 10 times a year reported symptoms, compared with 38% of those exposed less than once a year.

Figure 2 – Numbers and percentages of professionals experiencing symptoms after exposure to processionary caterpillars, by type of occupation, type of contact and frequency of exposure

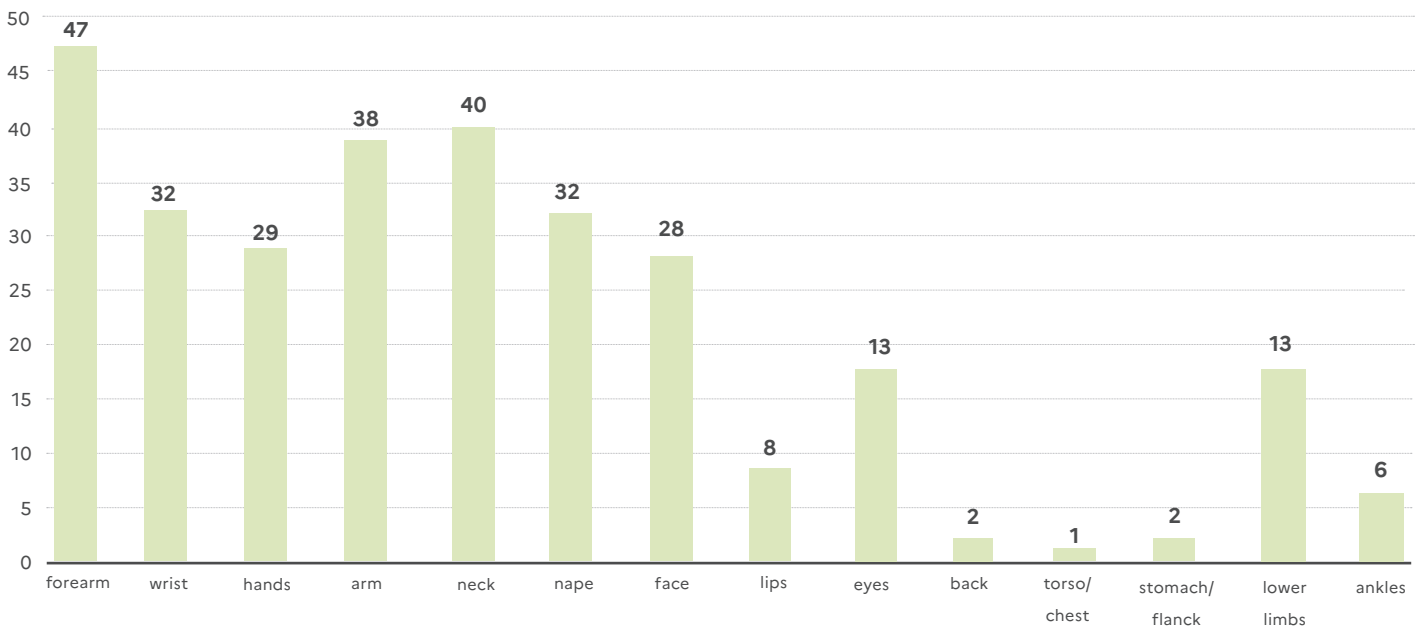


EYES AFFECTED AS WELL AS SKIN

While the symptoms reported were mainly dermal (98%), ocular symptoms were also reported by 28% of people, followed by respiratory (18%) and general (4%) signs.

The parts of the body affected by the stinging hairs were mainly exposed areas such as the forearms (47%), neck (40%) and arms (38%) (Figure 3), which could all be better protected.

Figure 3 – Percentage of professionals with symptoms according to the area of the body affected (several answers possible)



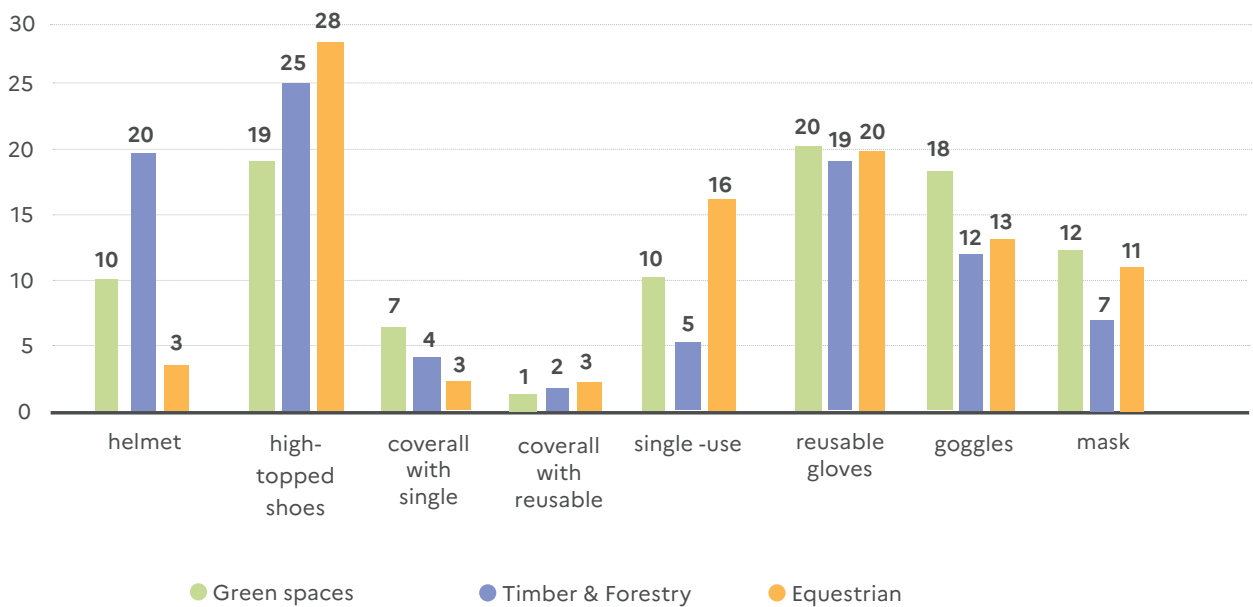
Lastly, 37% of professionals suffering poisoning had consulted a pharmacist, 25% a general practitioner and 5% an emergency service. Only 3% had consulted their occupational physician.

**HOW IS PERSONAL PROTECTIVE EQUIPMENT USED?**

Seventy-nine per cent of exposed individuals said they had worn one or more items of PPE to protect themselves from stinging caterpillars. Professionals working in green spaces were the most likely to wear it (85%), followed by timber and forestry professionals (77%) and equestrian professionals (61%).

However, the survey question concerned equipment worn as protection from caterpillars with stinging hairs, and people may have responded by listing any PPE worn for their job, regardless of the risk of exposure to caterpillars (e.g. helmets to protect them from impacts). The equipment used varied according to the occupation: helmets were preferred by timber and forestry professionals (20%), high-topped shoes by equestrian professionals (28%) and goggles by those working in green spaces (18%) (Figure 4).

**Figure 4 – Percentage of professionals using PPE, by occupation type. Respondents may have reported wearing more than one item of equipment**



To avoid any contact with stinging hairs when working on trees or in infested areas, it is important to remind these workers that they should wear PPE that protects

the skin, eyes and respiratory tract, just like for the professionals working on control of processionary caterpillars (see box).

In conclusion, the results of the CheniPRO study suggest that the risk of poisoning by processionary caterpillars is greater among professionals working in timber/forestry sectors and green spaces than among those working with horses. However, these results are based on a low response rate to the survey and should be interpreted with caution. Personal protective equipment tailored to the job, worn correctly and then decontaminated after use, is essential for safeguarding workers from contact with stinging hairs.



**Sandra Sinno-Tellier (ANSES)**  
**Maryline Deryene (ANSES)**  
**Emeline Hily (ANSES)**

**REFERENCE**

[1] SINNO-TELLIER, S. "Beware of stinging hairs from processionary caterpillars!"  
 Vigil'Anses 9 : p 1-5



**RECOMMENDATIONS ON PERSONAL PROTECTIVE EQUIPMENT FOR PROFESSIONALS INVOLVED IN CONTROL OF PROCESSIONARY CATERPILLARS**

**Source: National Research and Safety Institute (INRS)**

- disposable coveralls;
- high-topped shoes;
- impervious gloves (latex not cloth) with gauntlets, and disposable under-gloves (latex or vinyl) worn under the work gloves, enabling soiled clothing and equipment to be removed without contaminating hands;
- helmet with cape and powered respirator, or coveralls with hood, safety helmet and full-face mask with powered respirator, or coveralls with hood, and over-hood with powered respirator.

*ANSES would like to thank the Central Fund for the Agricultural Mutual Insurance Scheme (CCMSA) for randomly selecting the survey participants from the CCMSA database in accordance with the established*