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How to Effectively Deal with Fragrance Damage?



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HUMAN

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ABSTRACT

Fragrance pollution is different from a bad smell. Even though many people do not think the smell is bad, it is a type of pollution that can cause health problems if the chemical substances that cause the smell are inhaled or come in contact with the skin. Bad smells are caused by decomposing garbage or unsanitary conditions. However, fragrance damage occurs when household products such as detergents and cosmetics are fragrant with flowers or other artificial fragrances in the belief that they will benefit consumers. Additionally, this involves the use of microplastic beads, which may exacerbate global environmental problems. In this paper, we summarize the results of our investigation into why fragrance damage has become a problem in recent years and express our opinion.



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INTRODUCTION

In Japan, public pollution is defined according to the Basic Environmental Law. Public pollution refers to large-scale damage (in terms of the area affected or the number of people affected) caused by human activities, such as business activities, that affect human health and the living environment. Conventionally, the following seven types of public pollution are considered: air, water, soil, noise, vibration, ground subsidence, and odor. Air pollution refers to harmful volatile or suspended substances released into the air from factories and automobiles that can cause respiratory diseases and lung cancer in people who inhale air. Water pollution refers to harmful water-soluble substances discharged from factories and households into rivers and seas that affect living organisms and harm human health through the bio concentration of foods such as agricultural products and seafood. Soil pollution directly refers to soil in playgrounds and roadside flowerbeds, which are contaminated by rainfall and air pollutants. Problems arise when soil is dispersed into the air and enters the human body through the respiratory tract or is transferred to plants grown there. Noise refers to loud sounds produced by airplanes taking off and landing, driving cars, and building construction, which can cause hearing loss. Vibrations refer to the shaking of floors in workplaces and homes, which can cause insomnia. Ground subsidence is the sinking of ground due to factors such as a decrease in groundwater, which can destroy roads and buildings or disrupt the level. A bad smell is an unpleasant odor due to rotting garbage. All these are caused by human actions and do not include naturally occurring things.

In response to serious radioactive contamination at the Fukushima Daiichi Nuclear Power Plant following the Great East Japan Earthquake in 2011, the Basic Environmental Law was revised in 2012, adding the damage caused by radioactive materials to public pollution. However, we believe that these eight are not the only things that are considered public pollution and that there are others as well. Fragrance damage, which is the subject of this study, is similar to a bad smell but is not the same. While most people perceive bad smells as unpleasant odors, fragrance damage poses a health hazard, even when people do not perceive the smell as good or even when they cannot notice the smell¹⁾. This can be compared to the sensation of pesticides being sprayed on a person's face or hands. The percentage of people who believe that fragrance damage is unpleasant is low, and fragrance can be considered a newly emerging public pollution that is difficult to solve. In this paper, we discuss the reasons why fragrance damage has become a problem in recent years.

What is fragrance damage?

Fragrance damage is a type of chemical hypersensitivity caused by synthetic fragrances contained in household products, such as perfumes, synthetic detergents, fabric softeners, bath additives, insect repellents, cosmetics, and air fresheners, and they can cause health problems such as headaches and allergies^{1),2),3)} (Table 1). Fragrance damage is also referred to as incense pollution, olfactory nuisance, or smell harassment. Fragrances are added by companies that manufacture and sell household products for the convenience of consumers and buyers; cases, where fragrances have been associated with harmful effects, are considered rare and special. Many potentially harmful substances evaporate from household products, pollute the air, and produce pleasant smells. Many of these cases are suspected to be related to artificial chemicals, but the number (types) of substances that could be the cause is so large that it is not only impossible to identify them but also to establish a causal relationship¹⁾. In addition, sensitivity varies greatly among individuals⁴⁾. Therefore, solving this problem is difficult³⁾.

Fragrance damage can be said to be a new type of air pollution, in the sense that it is a health hazard that only a small number of people can cause by inhaling something that not everyone considers to be a bad smell. The term fragrance damage (pronounced Kougai in Japanese) was coined in Japan because it has the same pronunciation as public pollution. Fragrance damage occurred only at the beginning of the experiment. Even now, more than half a century after the outbreak, no comprehensive relief efforts have been made for the victims of the Minamata disease, which has been Japan's biggest pollution problem since World War II. Considering the long path that pollution has taken in the past, the recognition that fragrance damage is pollution is still not shared socially¹⁾.

Why is fragrance damage a problem?

In 2020, the National Consumer Affairs Center of Japan, which receives lifestyle consultations from consumers over the phone and Internet, reported that it had received 928 inquiries in Japan since 2014 about the health damage caused by the smell of fabric softener¹⁾. Of these, 78% were 30–60-year-old women. Considering this fact, the number of victims of fragrance damage has recently increased. In living spaces, some people in apartments or condominiums may become unwell because of the smell coming from a neighbor's laundry. Children may refuse to attend school because of the smell of fabric

softeners in school lunch coats, and fragrance damage can deprive children who are sensitive to the smell of chemicals of learning opportunities. Currently, consumer complaints regarding such odors are extensive. A person was forced to quit his job after becoming unwell due to the smell of his neighbor's perfume and fabric softener, and a doctor who closed his privately run hospital because of the smell of his patient (Table 2). In July 2020, a citizen-level survey revealed that more than 7,000 people nationwide were victims of fragrance damage¹⁾.

Furthermore, the microplastic capsules contained in fabric softeners increase the duration and severity of the health damage caused by fragrances. Household product manufacturers are releasing products with new functions such as bursting fragrance, long-lasting fragrance, and nanodeodorizing ingredients. Bursting fragrance was made possible by encapsulating the fragrance and deodorizing ingredients in plastic microcapsules. Each package of fabric softener contains tens of thousands of micro- or nano-sized capsules. After washing, the capsules stick to the clothes and burst into the air, releasing their contents. The fragrance effect lasts for a long time because the capsules rupture at different times rather than at once¹⁾. The application of microcapsule technology to household products has not only increased plastic pollution in rivers, seas, and air but has also reached a level where the impact on the human body cannot be ignored. This is because microscopic capsules inhaled through the nose can reach the lungs and damage the human body. In other words, microplastics not only accelerate the effects of fragrance damage but also have a direct impact on the environment and the human body.

Why is it difficult to control fragrance damage?

The following characteristics are currently known regarding fragrance damage¹⁾: **A)** caused by household items: The source of the damage is not automobile exhaust fumes or industrial workplaces such as factories, as in conventional air pollution, but is caused by household products such as fragrant synthetic detergents and fabric softeners in consumers' living spaces. **B)** Experiencing sex-specific damage: Approximately 80% of the victims are women. This may also be due to the fact that they are often involved in housework such as laundry in their daily lives. Additionally, many of the patients with chemical hypersensitivity are women, and it is speculated that women may be reacting to artificial fragrances. **C)** Targeting the sense of smell: The uniqueness of the sense of smell is greatly involved in fragrance damage. The smell is linked to an animal's instinct to protect itself from danger. The human sense of smell differs from the other five senses in that olfactory information from odor

stimuli directly reaches the amygdala in the limbic system, the emotional center, without passing through the thalamus. Inhaling an artificial smell triggers an emotional response similar to fear. **D)** Evokes olfactory hypersensitivity and olfactory fatigue: While there are people with olfactory hypersensitivity who are sensitive to the same smell and feel unwell, there are also many people with olfactory fatigue. The sense of smell is characterized by adaptation and fatigue. If you smell the same smell, you will become numb and experience olfactory fatigue. There is a growing polarization between people with olfactory hypersensitivity and those with olfactory fatigue, which seems to hinder a detailed understanding of fragrance damage. **E)** Mistaking artificial objects as natural: When people perceive the smell of lavender or roses, many consider them as natural fragrances; however, more than 90% of the fragrances incorporated into household products are synthetic. Fooled by its image as a natural product, people end up inhaling harmful synthetic chemicals. Therefore, it is impossible to eliminate substances that can cause fragrance damage in daily life. Currently, there is no cure for fragrance damage⁵⁾.

For example, the reason for **A)** is that while some people feel discomfort, others prefer fragrant products. It is not yet clear whether **B)** is caused by being a woman or by long contact time. Regarding **(D)**, it is about getting used to the scent, but it is unclear whether people will become accustomed to the occurrence of diseases and not get sick. As for **E)**, many consumers are unaware of E).

How deal with fragrance damage from now on?

Fragrance damage is caused by the fragrances added by manufacturers to household products, such as artificial flower fragrances, with consumers in mind. Manufacturers believe that this is good for consumers, and some consumers like it. Normally, only a small percentage of people are affected by smell and the fact that symptoms appear even when the smell is not clearly unpleasant or bad makes it extremely difficult to solve the problem. Therefore, fragrance damage can be perceived as something from which there is no escape⁶⁾. Consumers who use fragrant household products not only run the risk of developing chemical hypersensitivities themselves but also unintentionally put themselves at risk of causing illness in those around them.

Currently, consumers are free to decide whether to choose fragrant household products. There was no room for dissent. However, it should be possible to think that the smells emitted may

be unpleasant for others or cause illness. Considering this, it would be ideal not to use products with very strong fragrances, use products without fragrances, and prevent such products from being distributed⁷⁾.

There is a scent dispersion technology that uses microbeads to maintain a long-lasting scent, but its use should be avoided as much as possible, considering the environmental pollution problem caused by microbeads⁸⁾. If consumers take the initiative to avoid their use, then manufacturers and distributors will no longer develop such products. Currently, it is difficult to prevent people from reacting to fragrance ingredients. Even if a person can smell fragrant components, it is difficult to determine which component affects health, and people may become unwell even if there is almost no smell. The original purpose of each household product was other than fragrance, and fabric softeners were used to soften clothes. We believe that adding fragrance should be considered in the direction of eliminating it, and if possible, methods other than fragrance ingredients should be considered, such as deodorization and sterilization.

REFERENCES

- 1) Reiko Mizuno. (2021) Fragrance damage -A new form of air pollution. 21st-century pollution, Sekai, 942, Iwanami Shoten, Tokyo, 115-123.
- 2) Eiji Ogura. (2013) Fabric softener and fragrant. *Oleo Science*, 13, 533-538.
- 3) About fragrance damage and chemical hypersensitivity. Tsukuba City Official Website, published December 2, 2021, <https://www.city.tsukuba.lg.jp/kurashi/anshin/1016274.html> (browsed October 2022).
- 4) What is fragrant harassment? -What are the symptoms and what can I do? <https://www.chikichii.com/pollution-symptom.html> (browsed October 2023).
- 5) There is no cure -Fragrance damage caused by fabric softeners in perfumes- Doctors reveal the mechanism and countermeasures to take. Yahoo! Japan News, Weekly Women's Prime, published September 3, 2023, <https://news.yahoo.co.jp/articles/7c250d3636678e5ffc52aad8fb77801cf4dc0a4c> (browsed September 2023).
- 6) Fragrance pollution is a new type of pollution in our daily lives that there is no escape from -If it develops into chemical hypersensitivity, it may become more serious. Global Organic Network, published November 23, 2019, <https://organicnetwork.jp/lifestyle/2019/11/23/24196/> (browsed October 2023).
- 7) Rie Nakazawa. (2020) What is fragrant damage? -Learn about the odor problems of fabric softeners and detergents!- Explanation of countermeasures. Living with swelling, Johnson Home, published November 11, 2020, <https://www.johnsonhome.co.jp/media/live/kogai-kaorigai> (browsed October 2022).
- 8) Jun Kobayashi, Keiichi Ikeda. (2022) Continued use of nano plastic products. *International Journal of Pharmacy & Pharmaceutical Research*, 23, 229-238.

Table 1 Main household products that cause fragrance damage

Group	Type	Overview	Percentage that causes fragrance damage
Laundry supplies	Synthetic detergent Softener (softening agent)	A product used to remove stains from laundry such as clothing. Something that maintains the shape and flexibility of clothing and towels during washing. In recent years, there has been an increase in the number of fragranced products. Allergies may occur.	⊙ It lasts for a long time due to the effects of microcapsules. The user can choose whether there is a smell or not, but it is difficult to choose the type.
Bath supplies	Shampoo	Something that removes dirt from your hair and scalp. There are many different types available, including those that maintain oil content and those with scents. Allergies may occur.	△ Users can choose. It can also be changed depending on the day. People around the user can reduce the harm by keeping a distance from the user.
Cosmetics	Perfume	It relieves bad body odor and when mixed with sweat, it emits a pleasant odor for the user. Being warmed by body temperature makes it more fragrant. Allergies may occur.	△ Users do not feel it is harmful. People around the user may feel uncomfortable if the smell is strong.
Similar to pharmaceuticals	Deodorant (spray) Sanitizer (spray) Antiperspirant Bath salt Insect repellent	In some cases, malodor components can be reduced through pH changes and oxidation, but in other cases, strong aromas can mask the malodor. Aromatic components may also be a source of air pollution.	○ The user can choose whether there is a smell or not, but the type cannot be selected much. The smell does not last that long. However, fragrance components may be trapped indoors.

Based on references 1-4).

Table 2 Main symptoms of fragrance damage

Organ	Symptom	Manifestation of pathology
Skin	Allergy Atopic dermatitis Itching or swelling of the skin (if touched directly)	Skin contact with chemicals or wearing clothing contaminated with chemicals
Brain	Headache or nausea Sleep disorders or depression symptoms Decline in thinking ability	Invasion of chemical substances into the body (transfers to the brain or affects nerves)
Brain, eyes	Dizziness, flashing eyes, or blurred eyes	Chemical entry through the eyes
Lung, heart	Breathlessness or palpitations	Transfer of chemicals into the body (transfer to the heart and lungs)
Respiratory tract, lungs	Sore throat or cough	Transfer of chemicals to the digestive tract
Nose	Stuffy or runny nose	Nasal inhalation of chemicals
Joint	Arthralgia	Invasion of chemical substances into the body (involved in joint transfer and increase/decrease of joint components)
Other such as whole-body	General fatigue Fever Loss of appetite	Some have known causes and some do not.

Based on references 4) and 7).