



**Co-funded by
the European Union**

Action Number: **LIFE21-GIE-DE-LIFEChemBee/101074245**

Action Acronym: **LIFE CHEMBEE**

Action title: **LIFE Chemical Ambassadors for Europe**

Deliverable 9.3: Do End-Users Matter?

Document information:

Deliverable nature: Report

Dissemination level: Public

Contractual delivery date: 30/06/2026

Actual delivery: 16/06/2026

Version: 1.0

Lead Author: BEN03 ZERO

HISTORY OF CHANGES		
Version	Publication date	Changes
1.0	16/06/2026	Initial version

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WP9 Impact Assessment Report	Task leader: BENO3 ZERO
Version 1.0	16/06/2026

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I Key message: End users are central to LIFE implementation because everyday exposure to endocrine-disrupting chemicals (EDCs) and microplastics occurs through ordinary choices, products, and domestic environments. The attached results show that exposure-related patterns differ by sex, pregnancy status, age and follow-up behavior, supporting the need for user-centered prevention, particularly due to delays and challenges in implementing more protective policies.

II Key message: Health is not only the absence of disease. It depends on the quality of the environment in which we live, eat, breathe, wash, clean, and raise children. Everyday items such as plastic bottles, food packaging, cosmetics, textiles, furniture, detergents, toys, and flooring may release harmful substances into indoor air, dust, food, water, and onto the skin.

Introduction

This report is a result of the LIFE ChemBee project that aimed at a substantial increase in the awareness of end-users on harmful substances in products used in daily life. The objective was to change consumption patterns substantially and in a long-term perspective, contribute to concrete emissions reduction of some problematic substances.

By analyzing data collected throughout the project, we will discover if the “The end-user matters”. More concretely, we aim at testing the hypothesis that by working and capacitating consumers on where hazardous substances can be found in day-to-day life and providing them with less impactful alternatives, it is possible to reduce the presence of hazardous chemicals in the lives of those involved and impacted by the project.

We know that chemical substances are ubiquitous in everyday products and consequently in the environment and in our bodies, where they form a unique cocktail, depending on lifestyles and daily choices and habits of each one of us.

Some of these substances may damage human health due to their properties (endocrine disruptors, carcinogenic, persistent, bioaccumulative, among others).

Despite acting at source being identified as the most effective way to reduce these negative impacts on human health and the environment, it has been shown that it is not the most common default option, leaving end users (companies, municipalities, citizens) with most of the burden to protect themselves from them.

While better legislation is being negotiated between policy makers and industry to prevent chemical pollution, LIFE ChemBee aimed at motivating and capacitating the end-user (consumer) to act, empowering them to make concrete improvements, preventing health impacts from their surrounding environment.

In this report, we will highlight the positive results from an empowering campaign, but we will also highlight the challenges that citizens face when they try to change their lifestyles and consumer choices.

An executive summary of this report is available on all partners' websites (in their national language), and the English version can be found on the LIFE ChemBee website.

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1. Context – Why it matters

Why citizens’ daily choices matter for reducing exposure to hazardous substances

Reducing everyday exposure to hazardous substances is highly relevant for both public health and environmental protection. In Europe, people are exposed to chemicals not only through food and outdoor pollution, but also through ordinary consumer products used indoors every day, including cosmetics, cleaning products, plastics, textiles, furniture, electronics and building materials. The European Environment Agency (EEA) notes that people are exposed to hazardous chemicals through direct contact with products, as well as through indoor air and dust, where substances such as phthalates can accumulate.[1] This matters because households are not only places of exposure, but also sources of emissions: chemicals are released during product use, washing, abrasion, evaporation and disposal, entering sewage systems and, ultimately, the wider environment.

The health implications are substantial. Hazardous substances present in everyday products include carcinogens, reproductive toxicants and endocrine-disrupting chemicals (EDCs), which can interfere with hormonal systems and contribute to adverse health outcomes. The World Health Organization (WHO) stresses that exposure during pregnancy and early childhood is of particular concern because these are sensitive windows of development and the consequences may last throughout life.[2] WHO also highlights that children are especially vulnerable to EDCs because they are exposed to low doses and mixtures of substances, often in everyday environments, and because their bodies and hormone systems are still developing.[2][3] This makes the reduction of domestic exposure not merely a matter of consumer preference, but an important preventive health measure.

The environmental case is equally strong. Many hazardous substances used in consumer products are persistent, mobile, or difficult to remove once they enter waste streams. The EEA has underlined that Europeans are exposed to complex mixtures of chemicals in daily life and that these substances can also pollute ecosystems.[4] In the case of PFAS, for example, the EEA notes that exposure may occur through products, textiles, cosmetics, sprays and building materials, with emissions into indoor environments and the wider ecosystem.[5] German Environment Agency materials likewise show that certain hazardous substances, including phthalates and some endocrine-active compounds, are not fully removed in wastewater treatment and may therefore continue into sludge, surface waters or other environmental compartments.[6][7] This reinforces the point that household choices can have consequences beyond the home: personal consumption contributes to environmental contamination, which in turn feeds back into human exposure.

Against this backdrop, there is a strong rationale for promoting a reduction in daily contact with hazardous substances. Eurobarometer findings from 2024 show that 78% of Europeans believe environmental issues directly affect their daily life and health, while concern about harmful chemicals in products remains high.[8] This concern is justified, yet concern alone does not ensure effective action. Current evidence suggests that many citizens want to make safer choices but lack the practical conditions to do so consistently.

What we already know is that daily choices can reduce at least part of the burden. Exposure is not fixed: it is shaped by what people buy, how often they use certain products, how products are stored and disposed of, and whether unnecessary items are avoided altogether. For many product categories

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safer alternatives already exist, and in some cases exposure can be reduced simply by cutting down the number of products used. Cleaning products are a telling example: households often store large numbers of specialised products even though a much smaller set of basic products may be sufficient for most purposes. This means that burden reduction does not depend only on sophisticated substitution; it can also come from simplification, moderation and routine changes.

There is also increasing recognition that consumer action can support broader market change. Under the REACH Regulation, consumers have a legal “right to know” whether articles they buy contain substances of very high concern, and suppliers are expected to provide relevant information.[9][10] In principle, this creates a mechanism through which consumer demand can encourage substitution. Projects such as LIFE AskREACH were built around exactly this logic, seeking to help consumers and companies operationalise this right and improve transparency on hazardous substances in articles.[10][11] In other words, everyday choices can matter in two ways: directly, by lowering individual and household exposure, and indirectly, by signalling demand for safer products and stronger regulation.

The main barriers

However, the evidence also shows that citizens face major obstacles when trying to move towards a less hazardous daily life. The first is **low chemical literacy**. People may have heard of a few well-known substances, such as BPA or PFAS, but usually have little overview of the full range of substances present in plastics, coatings, textiles, furniture, paints, electronics or building materials. Since the number of products and mixtures in an ordinary household can easily reach the hundreds, the scale of the issue is difficult to grasp. The EEA has noted that exposure occurs through multiple pathways and product groups, while WHO has stressed the importance of understanding cumulative and mixture exposure.[1][2] Yet most consumers are not equipped to evaluate such complexity in real-life shopping situations.

A second barrier is **inadequate and fragmented information**. Labels are often incomplete, difficult to interpret, or of limited use for comparing products. For many solid articles, consumers still do not have easy access to clear information about the presence of hazardous substances. Although REACH created a right to request such information, both public authorities and civil-society initiatives have acknowledged that practical implementation remains uneven.[9][10] This leaves consumers in a weak position: they are expected to make informed decisions in a market where chemical transparency is still partial.

A third difficulty is **behavioural**. Daily consumption is strongly related with routine and shaped by habits, traditions, familiarity and convenience. Product choice for cleaning, personal care, furnishing or food storage is often rooted in habit, convenience, price, family traditions or brand familiarity. Hazardous substances are also largely invisible, unlike litter or smoke, which makes risk perception more difficult. As a result, many people underestimate the extent of exposure in their own homes. The information environment can worsen this problem. Even when motivation is high, making safer choices can feel overwhelming. Pregnant women, for example, are often highly motivated to reduce risks, but they are confronted with contradictory advice online, confusing labels, and limited support from healthcare professionals on environmental exposure prevention.[2] There are also situations where

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individual action becomes difficult due to a lack of technical knowledge to distinguish between the options available or even the barriers resulting from purchasing options that can be more expensive or unavailable in the most familiar stores. This combination of motivation and disempowerment is an important finding: people may care deeply yet still be unable to act effectively.

Finally, these individual difficulties are compounded by **structural shortcomings**. Regulation still lags behind scientific knowledge, many hazardous substances remain unlabelled or insufficiently regulated, and political frameworks often place too much responsibility on consumers, instead of preventing exposure at source. Citizens are therefore asked to make complex decisions in a market that remains insufficiently transparent and protective.

The ChemBee approach

As shown above, awareness alone is unlikely to be enough. The approach of LIFE ChemBee aims at overcoming some of the barriers identified because it moves beyond information provision and into practical behaviour change. Via peer-to-peer support and trained “chemicals ambassadors” and household checks the project supports people in identifying problematic products and adopting feasible alternatives in their own domestic routines,[12][13] making an abstract issue tangible. By linking chemical exposure to the products people use, this approach strengthens self-efficacy and helps overcome the common sense that the problem is too large or too technical for individual action.

In the following chapters we will present the data resulting from the use of the CheckED tool that users were instructed to use twice, first to establish a baseline and a second time to evaluate the changes introduced. It is with this data, enriched by the feedback from the different partners resulting from the training of ambassadors and subsequent follow up activities, that we will try to contribute to answering the main question of this report: does the end user matters?

2. Purpose and scope

2.1. Everyday exposure begins with one bottle...

Even the use of a single plastic bottle of water may represent simultaneous contact with two relevant exposure pathways: endocrine-disrupting chemicals and micro-/nanoplastics. Plastic packaging is not biologically inert. Recent research has shown that bottled water can contain large numbers of micro- and nanoplastic particles, while the broader literature on food-contact materials has long demonstrated migration of endocrine-active substances such as bisphenols and phthalates into foods and beverages.

2.2. Scaling a single daily act to the European population

On 1 January 2025, the population of the European Union was estimated at 450.4 million inhabitants. If each person used only one plastic water bottle per day, this would correspond to 450.4 million potential daily exposure events, 3.15 billion weekly exposure events, and 164.40 billion yearly exposure events in the EU alone. This simplified calculation is not intended as a biomonitoring

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estimate; rather, it illustrates how a small, repeated behavior can become a major public-health issue when multiplied across a large population.

Table 1. Illustrative scaling of one daily bottled-water exposure event to the EU population

Time horizon	Potential exposure events if each EU inhabitant uses 1 plastic bottle
Per day	450.4 million
Per week	3.15 billion
Per year	164.40 billion

Source: calculation based on EU population estimate reported by Eurostat [1].

3. Why end users matter in LIFE projects

The significance of end users in LIFE projects lies in the fact that real-life exposure is cumulative, domestic, and behaviorally mediated. A single bottle is only one source among many. Additional sources include food-contact materials, thermal receipts, cosmetics, detergents, textiles, furnishings, indoor dust, electronics, cookware, and other everyday-use products.

This means that prevention cannot rely only on upstream regulation or technological innovation, particularly because both are commonly slow in producing results for citizens and not always integrate the most up to date scientific knowledge. Therefore, those are necessary, but insufficient on their own. Exposure becomes real in kitchens, bathrooms, nurseries, workplaces, and shopping decisions. Therefore, end-user engagement is not an optional dissemination component; it is a core mechanism of impact.

3.1. Hazardous substances, endocrine-disrupting compounds, and...end users' health

<p>How exposure happens</p> <p>Harmful substances enter the body through three main routes: inhalation, ingestion, and transdermal absorption. They can be inhaled with polluted indoor air and dust, swallowed with contaminated food and beverages, or absorbed through skin contact during normal daily use of products.</p>	<p>Why it matters for health</p> <p>Scientific and medical studies link chronic exposure to harmful substances with a higher risk of obesity, infertility, type 2 diabetes, cardiovascular diseases, cancers, thyroid disorders, endometriosis, premature birth, ADHD, and autism. Some compounds are toxic, reprotoxic, genotoxic, mutagenic, or endocrine-disrupting, meaning they may act even at very low doses and disturb key biological processes.</p>
<p>Why mixtures matter</p> <p>In real life, no one is exposed to only one chemical. We are exposed to mixtures of substances, repeatedly and over many years. This cumulative burden may produce stronger</p>	<p>Timing and duration</p> <p>Long-term exposure gradually disrupts the body's protective mechanisms. Timing is equally important: exposure during pregnancy, infancy, and early childhood may have disproportionate</p>

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and more complex health effects than exposure to a single substance alone.	effects on development, metabolism, and future disease risk.
<p>Who is most vulnerable</p> <p>Pregnant women, fetuses, neonates, infants, and older adults require special protection. Harmful substances may cross the placenta, reach the fetus, and influence development, including through epigenetic changes that may affect not only the child, but potentially later generations.</p>	<p>The good news</p> <p>Daily choices matter. Reducing contact with plastics and other avoidable sources, choosing safer alternatives, and improving home environments can lower exposure. Studies show that simple lifestyle changes may reduce endocrine disruptor burden, and that avoiding selected products - such as canned foods - can decrease internal exposure to compounds such as BPA.</p>

3.2. Safe alternatives and what lower exposure looks like

Safe alternatives are a critical component of EDCs exposure reduction, because effective prevention depends not only on regulatory action (which is of high importance), but also on the availability of realistic and accessible substitutes in everyday life. In the domestic environment, exposure is often continuous, multifactorial, and largely shaped by habitual behaviours. It arises from repeated contact with food packaging, plastic bottles, food storage materials, ready-to-eat and highly processed products, fragranced cosmetics, household cleaning agents, indoor dust, synthetic textiles, furniture, and other consumer products used on a daily basis. These exposures are relevant because hazardous substances may migrate into food and beverages, accumulate in household dust, evaporate into indoor air, or be absorbed through dermal contact. As a result, the home becomes an important setting of cumulative exposure, particularly during sensitive windows such as pregnancy, infancy, and childhood.

A low-exposure lifestyle is therefore not defined by complete avoidance, but by the systematic replacement of avoidable sources with safer and simpler alternatives. In the context of food-related behaviours, lower exposure is generally associated with choosing fresh or minimally processed foods more often, reducing reliance on ready-to-eat meals, canned foods, and heavily packaged products, and replacing plastic food-contact materials with glass, ceramic, or stainless steel whenever feasible. Practical examples include drinking tap or filtered water from glass or stainless-steel bottles instead of single-use plastic bottles, storing meals in glass containers rather than soft plastic boxes, and avoiding heating food in plastic packaging, especially when foods are hot, fatty, or acidic. Similarly, fresh homemade soup represents a preferable alternative to canned soup, loose or minimally packaged produce may be preferable to heavily wrapped products, and glass infant feeding bottles may reduce unnecessary contact with plastic materials during early life.

The same principle applies to personal care and household maintenance. Lower exposure is more commonly observed in households that simplify daily routines and reduce the overall number of chemical-containing products in use. Safer alternatives may include fragrance-free cosmetics, products with shorter and more transparent ingredient lists, solid soap instead of multiple heavily fragranced liquid products, and the use of basic cleaning agents in place of numerous specialised sprays, air fresheners, and perfumed detergents. In this context, lower exposure is often linked not only to

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product substitution, but also to reduced product intensity: fewer fragrances, fewer unnecessary additives, and less frequent use of products marketed primarily for scent, shine, or antibacterial effect.

Within the wider home environment, safer choices also concern materials and furnishings. Natural or less intensively treated materials, such as cotton, linen, wool, wood, glass, and stainless steel, may represent preferable alternatives to heavily processed synthetic materials, stain-resistant coatings, or waterproof finishes when such substitutions are feasible. Examples include choosing untreated or more simply finished textiles over stain-repellent fabrics, using washable curtains and furnishings that facilitate dust control, selecting wooden or metal food utensils instead of plastic ones, and reducing unnecessary decorative or disposable plastic items in kitchens and children’s spaces. Regular ventilation, wet dust removal, and limiting the accumulation of dust-retaining synthetic materials are also characteristic of lower-exposure households, as indoor dust can act as a reservoir for multiple hazardous substances.

Importantly, low exposure is associated not only with reduced chemical burden, but also with broader health and environmental benefits. It reflects a lifestyle in which repeated contact with multiple EDC sources is systematically minimised, particularly in relation to vulnerable population groups such as women of reproductive age, pregnant women, infants, and children. Such an approach may contribute to a healthier indoor environment, lower cumulative exposure to chemical mixtures, and reduced release of hazardous substances into wastewater and household waste streams. In this sense, safer substitution should not be viewed as a marginal lifestyle preference, but as a practical and evidence-based form of prevention. This is fully consistent with the CheckED approach, which focuses on helping users identify modifiable exposure sources and replace them with feasible alternatives that support both human health and environmental protection.

4. Data source and interpretive approach

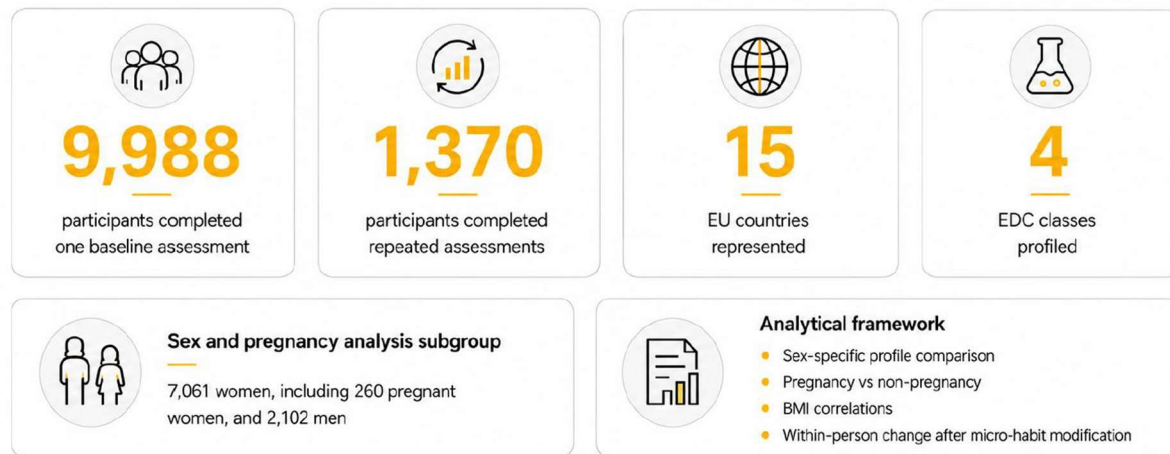
The statistical results presented in this report are derived from the CheckED app. The file reports comparative results for bisphenols, phthalates, alkylphenols, and brominated flame retardants (BFRs) across several groups: men versus women, pregnant women versus other women, and first versus second checks after reported lifestyle or home-related changes.

Overall, during the project’s duration, almost 10,000 people used CheckED to evaluate their exposure to hazardous chemicals, with 1370 doing it twice, so using the tool to do a double check after implementing changes in their daily lives. Of these, a large majority were women (7061), of whom 260 were pregnant when using the tool.

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Study population and data structure

Large-scale, anonymised, prospective real-world app data from across Europe.



The interpretation below follows three principles. First, statistical significance is discussed alongside practical relevance rather than treated as a proxy for causality. Second, the results are read as indicators of exposure-related patterns, not as direct measurements of internal dose. Third, findings are linked to implications for prevention and policy design, which is essential in a LIFE context.

The results should be read taking into consideration that those involved in the project, namely the ambassadors trained and most of those involved more actively in using the tools and materials produced by the project, are part of a group that is already more aware, knowledgeable and has already intervened in their context to reduce exposure, even before being involved in the project. So, we can safely say that a significant part of those involved in the project are not new to the subject of hazardous substances and have already changed the more easily accessible aspects of this complex intervention. This can explain the not-so-expressive reduction in exposure to the different hazardous substances analyzed by the project.

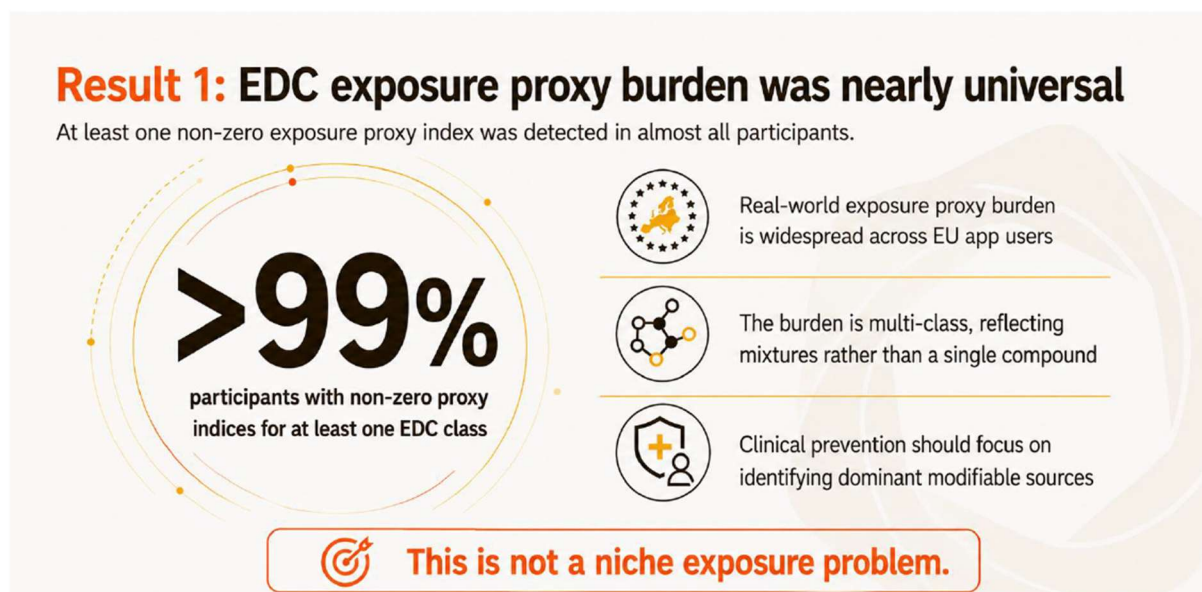
To this, we should add the feedback we received from chemical ambassadors on the difficulties that even those more proactive and informed encounter in their day-to-day lives to act on it. In fact, changing lifestyles and or even changing structural aspects of their households (furniture, floorings, etc.) is difficult and complex and collides with busy and sometimes already overwhelming day-to-day lives where practicability and easy access play central roles in daily management of obligations and tasks. If this can be said about this highly motivated and aware group, we can only imagine how harder it will be for those who have lower literacy and, in many cases, lower incomes to even begin to think about changing day-to-day habits or more structural aspects of their households.

So, although the end-user action matters and can have an impact in reducing daily exposure to hazardous substances, it is hardly enough to make a structural change in the emissions of hazardous substances from their daily lives. For this to happen, intervention at a higher stage in the chain is necessary to protect everyone's health, but particularly, the health of those who, for various circumstances, are less aware or capable of protecting themselves.

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5. Interpretation of results

When analyzing the data, one of the first conclusions is that the EDC exposure proxy burden was nearly universal, clearly showing that this is not a niche problem. Although not new or unexpected, it is nonetheless concerning to see it yet again confirmed. This exposure is multi-class, reflecting mixtures rather than a single compound, as a result of the different interactions each person has with multiple EDC sources.



5.1. Lifestyle-related exposure: men versus women

In the lifestyle-related comparison, men showed significantly higher mean scores than women for bisphenols (5.61 +/- 2.7 vs 4.2 +/- 2.4), phthalates (6.1 +/- 3.0 vs 4.5 +/- 2.7), and alkylphenols (5.5 +/- 2.9 vs 4.3 +/- 2.6). For BFRs, no statistically significant difference was reported.

This pattern suggests that lifestyle-related exposure is not distributed evenly across the population. Men in this dataset appear to have higher exposure-related scores in several key EDC groups, indicating that sex-specific routines, product use, dietary patterns, occupational contact, or handling of consumer materials may shape risk. For LIFE actions, this argues against generic communication and supports more tailored end-user pathways.

5.2. Lifestyle-related exposure: pregnant women versus other women

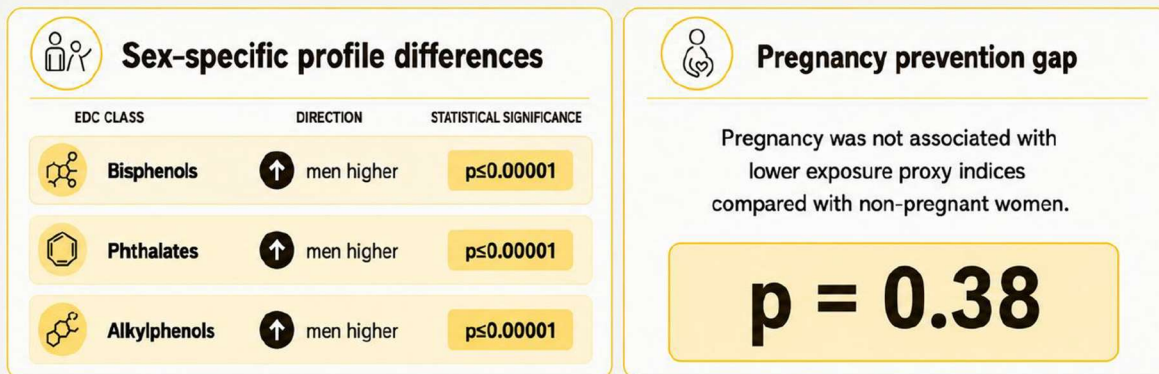
In the lifestyle-domain comparison between pregnant women (N = 260) and other women (N = 7061), no statistically significant differences were reported for bisphenols (5.2 +/- 2.6 vs 4.2 +/- 2.4), phthalates (5.7 +/- 2.97 vs 4.5 +/- 2.4), alkylphenols (5.0 +/- 2.8 vs 4.2 +/- 2.4), or BFRs.

This is a critical implementation finding. Pregnancy is a biologically sensitive window for endocrine disruption, yet the absence of clear differences suggests that pregnancy alone does not automatically translate into lower exposure-related behavior. In policy and project terms, this means that vulnerable groups require active, targeted support rather than relying on the assumption that awareness will arise naturally.

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Result 2: sex-specific profiles and the pregnancy prevention gap

Men showed higher exposure proxy profiles for several EDC classes, while pregnancy did not confer lower estimated exposure.



Pregnancy is not protective in real-world exposure patterns – prevention opportunities remain underused in reproductive endocrinology.

5.3. Home-related exposure: pregnant women versus other women

In the broader home-related comparison, pregnant women and other women again showed no statistically significant differences for bisphenols (29.7 +/- 17.27 vs 29.51 +/- 16.5), phthalates (32.4 +/- 19.0 vs 29.8 +/- 16.2), and alkylphenols (25.6 +/- 14.7 vs 24.6 +/- 14.0). By contrast, BFRs differed significantly (15.9 +/- 10.0 vs 23.8 +/- 15.87).

The result reinforces the conclusion that pregnancy does not, by itself, protect against most domestic exposure-related domains captured here. The significant BFR difference, however, suggests that some household pathways may vary by life stage or home-use pattern. Since BFR exposure is often linked to indoor environments, furnishings, electronics, and dust, this finding supports home-centred preventive action.

5.4. Home-related or broader exposure: men versus women

In the broader men-versus-women comparison, men again showed higher scores for bisphenols (31.0305 +/- 16.0 vs 29.5 +/- 16.5), phthalates (34.2 +/- 17.9 vs 29.8 +/- 16.3), and alkylphenols (26.6 +/- 13.530 vs 24.7 +/- 14.16). Women, in contrast, showed higher BFR values (23.5 +/- 15.7 vs 16.0 +/- 10.2).

Taken together with the lifestyle results, this pattern suggests that exposure is multi-route and chemically differentiated. Different substance groups appear to cluster around different domestic and behavioural contexts. This has direct value for LIFE implementation: prevention tools should be substance-aware, context-aware, and adapted to the routines of specific groups rather than framed in overly general terms.

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5.5. Results after reported lifestyle changes

The repeated-check results after lifestyle-related changes showed a statistically significant difference for bisphenols (4.5 +/- 2.69 at first check vs 4.4 +/- 2.45 at second check). For phthalates (4.86 +/- 2.86 vs 4.78 +/- 2.7) and alkylphenols (4.5 +/- 2.7 vs 4.5 +/- 2.6), the differences were not statistically significant. For BFRs, the p value is reported as 0.000000, but the corresponding means are not visible in the supplied extraction and should therefore be interpreted cautiously.

This is still an important result. It indicates that at least some exposure-related domains, notably bisphenols, may respond to lifestyle-focused intervention or follow-up. The more limited shifts in other domains are equally informative: they suggest that individual behaviour change alone may not be enough where exposure is embedded in widespread consumer products and built environments. In other words, users can change, but safer systems are also needed.

5.6. Results after reported home-related changes

The repeated-check results after home-related changes showed statistically significant differences across all four groups: bisphenols increased from 29.3 +/- 16.4 to 30.4 +/- 17.0, phthalates from 30.3 +/- 16.8 to 31.0 +/- 17.06, alkylphenols from 24.7 +/- 14.05 to 24.8 +/- 14.3, and BFRs from 21.4 +/- 15.0 to 24.1 +/- 15.1.

These findings should be interpreted with care. Statistical significance does not, by itself, establish that home changes causally increased exposure. The differences may reflect subgroup composition, reporting differences, score structure, or follow-up bias. The fact that structural changes in the households tend to be more difficult to implement can help explain these results, since from the first to the second check not many structural changes were probably possible. It is also interesting to consider the possibility of explaining the slight increase in the values in the four different groups, from the first household check to the second, on a possible improvement in the knowledge, allowing the users to correct some of the answers given the first time. When we are talking about structural aspects of the house (walls, furniture, ceilings, etc.) it is not always easy to immediately identify materials and their constitution. So, it is highly plausible that from the first to the second check there was an effort to improve the understanding of this, which led to some changes in the answers. This, associated with the difficulty in changing the structural elements of the house, may be the most plausible explanation for this somewhat unexpected result.

5.7. Age-related exposure patterns

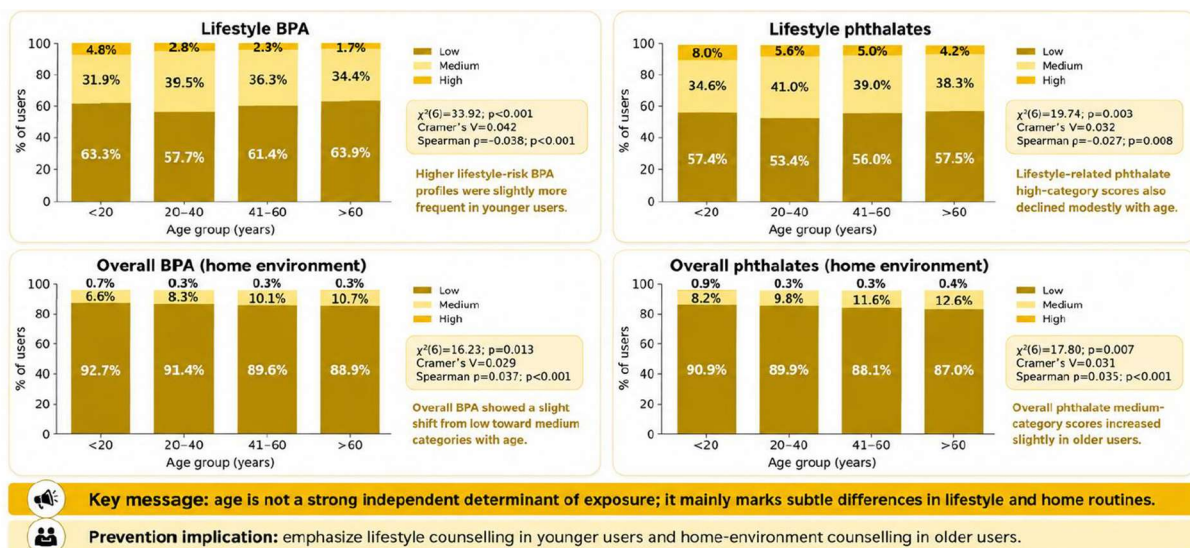
The age-stratified analysis adds an additional layer to the interpretation of end-user exposure patterns. Across 9,530 CheckED users, age was statistically associated with the distribution of BPA- and phthalate-related exposure categories, both in the lifestyle domain and in the broader exposure indices. However, the magnitude of these associations was very small, which means that age should not be interpreted as a strong independent determinant of exposure, but rather as a marker of subtly different behavioral and domestic routines.

For lifestyle-related BPA, younger participants showed a slightly higher proportion of high-score profiles, with the highest percentage observed among users below 20 years of age, whereas the proportion of high lifestyle-related BPA scores gradually decreased in older age groups. A similar pattern was observed for lifestyle-related phthalates, where the highest proportion of high-category

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scores was again recorded among the youngest users and declined progressively with age. This suggests that younger participants may be more frequently exposed through lifestyle-mediated sources, such as packaged foods and drinks, personal-care products, plastic food-contact materials, convenience consumption, or other everyday behaviours linked to modern consumer routines.

In contrast, the broader BPA and phthalate indices showed a different pattern: the proportion of low-category scores slightly decreased with age, while medium-category scores increased modestly among older participants. This may indicate that, although younger users may present more pronounced high-risk lifestyle behaviours, older users may accumulate a more stable background exposure related to long-standing household characteristics, food-storage habits, domestic materials, indoor dust, furnishings, or other less easily modifiable environmental sources. Importantly, high categories in the broader BPA and phthalate indices were rare across all age groups, which limits overinterpretation of extreme exposure patterns.



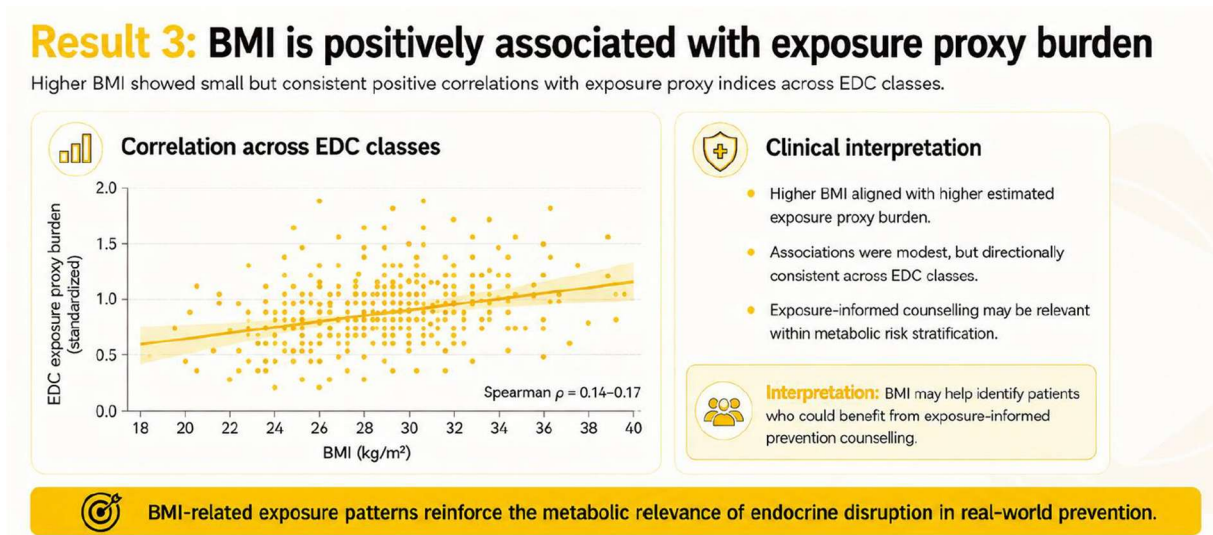
Taken together, these findings reinforce the central LIFE message that exposure is cumulative, domestic, behaviourally mediated, and age contextual. Prevention should therefore not rely on one generic communication pathway. Younger users may benefit most from messages focused on lifestyle, consumption habits, plastics, cosmetics, and convenience-related sources, whereas older users may require more support in identifying less visible and more structural sources of exposure in the home. From an implementation perspective, the age-related results confirm that end-user tools such as CheckED are valuable because they help translate invisible and complex exposure pathways into practical, age-sensitive prevention priorities.

5.8. The impact of body mass index (BMI)

Analysis of data revealed that higher BMI was associated with a modest but consistent increase in exposure proxy burden across the analyzed EDC classes. Although the correlations were small, their direction was stable, suggesting that individuals with higher BMI may carry a higher estimated everyday exposure burden. From a clinical and public health perspective, this finding supports the

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relevance of exposure-informed counselling within metabolic risk assessment. It indicates that BMI may help identify groups who could particularly benefit from preventive guidance aimed at reducing contact with endocrine-disrupting chemicals in daily life.



5.9. Case study – Bathroom items and EDCs

In order to provide a clearer perspective of what happens inside the homes of European citizens we analysed some categories of products known to contribute to exposure to hazardous substances with EDC properties, combined with some daily habits like airing and cleaning, that are known to contribute significantly to accumulation inside the homes of these types of chemical substances.

Air fresheners - Most users reported no exposure or the lowest exposure category. However, approximately **18.3%** of users were classified into higher categories, which is relevant from an EDC perspective, as fragranced products may be a source of phthalates, volatile organic compounds, and other substances important for indoor air quality.

Detergents – A much more even distribution and a less favourable pattern have emerged in this category of products. Almost **52.2%** of users were classified above category 0, and as many as **24.5%** were in the highest category. From both a statistical and practical perspective, detergents appear to be the most important bathroom/domestic source of potential exposure in this dataset, more relevant than air fresheners or bath rugs.

Bath rugs – Even if less relevant than detergents in this dataset, they are still potentially a relevant source of exposure, considering that approximately **40.7%** of users were classified into categories **2–3**. From an EDC and indoor-exposure perspective, bath rugs are important not only as a potential source of substances released from synthetic materials but also as a reservoir for dust, moisture, and domestic contaminants.

Plastic items – Regarding the number of plastic items identified by users in their bathrooms, the median value of **5** indicates that a typical user reported approximately **five plastic items** in the

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bathroom. However, the mean value of **12.26** suggests a strongly right-skewed distribution, with a subgroup of users reporting a much higher accumulation of plastic items.

Use of Ecolabel/non-ecolabel cosmetics: On average, users reported more than twice as many non-ecolabel cosmetics (mean 9,88) as ecolabel cosmetics (mean 4,11). From an EDC perspective, this suggests that cosmetics and personal care products may represent one of the key areas for intervention, particularly in relation to phthalates, fragrance-related substances, preservatives, and other compounds present in products used in everyday routines.

Airing areas in the home is key to preventing higher concentration of hazardous substances. Bathrooms aren't always an easy space to manage in this respect considering that in many cases they do not have windows. Anyway, the most common answer is a few times a week. Only **18.0%** of users reported ventilating the room **several times a day**, while **20.5%** reported doing so **once a day**. From an indoor-exposure perspective, this is important because ventilation is one of the basic mechanisms for reducing concentrations of volatile organic compounds and other substances present in indoor air.

A more thorough **cleaning routine**, allowing for dust removal and floor cleaning, seems to be more common on a weekly basis, leaving airing as the most common practice to reduce the presence of hazardous substances. In fact, vacuuming once a week or less is common for 58% of users of CheckED. Regarding wiping the dust, once a week or less is common for 77% of users and 79% report mopping the floor with the same frequency. These results suggest that dust-related exposure may represent an important modifiable pathway, as indoor dust can act as a reservoir for EDCs and other chemicals released from consumer products, plastics, textiles, furnishings, and household materials.

Table 2. Regularity of cleaning habits

	Once a week or less	Few times a week	Once a day	Few times a day
Airing	1342	4981	2111	1854
Vacuuming	3632	1924	567	100
Wiping dust	4765	1146	219	41
Mopping the floor	4899	1024	239	51

6. Behavioural change between the first and second CheckED assessment

The comparison between the first and second CheckED assessments provides an important insight into how end users respond when they receive structured information on everyday sources of exposure. In this part of the analysis, the focus was placed on food-contact and kitchen-related behaviours that may contribute to exposure to bisphenols and phthalates, including eating food from plastic packaging, using plastic lunchboxes, heating food in plastic, drinking from plastic bottles, using plastic kettles, coated pans, canned foods, capsule coffee, and bamboo or melamine tableware. The response scale was ordinal, ranging from **1 = daily** to **4 = rarely**. Therefore, a shift towards higher values reflects a favourable behavioural change, because the exposure-related behaviour is reported less frequently. Since the analysis compared answers from the same users between the first and second check, the Wilcoxon signed-rank test was used to assess within-user change.

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6.1. Within-user behavioural changes between the first and second check

The Wilcoxon analysis showed that not all behaviours changed significantly between the two assessments. This is an important and realistic finding. It indicates that **end-user intervention does not produce uniform change across all exposure pathways, but rather acts more strongly on behaviours that are visible, easy to understand, and relatively easy to replace.**

The clearest improvement was observed for **eating food in plastic packaging**. This behaviour changed significantly between the first and second assessment ($p = 0.000177$). The direction of change was favourable: the proportion of users reporting daily eating of food in plastic decreased from approximately **22.8%** at the first check to **17.0%** at the second check, while the proportion reporting that they did this rarely increased from approximately **22.4%** to **29.9%**. This suggests that users were able to recognise plastic food packaging as a modifiable source of exposure and to reduce this behaviour after the first CheckED assessment.

A second statistically significant improvement was observed for **plastic lunchboxes** ($p = 0.006344$). The proportion of users reporting daily use of plastic lunchboxes decreased from approximately **12.3%** to **8.5%**, and the combined proportion of users reporting daily or several-times-a-week use also decreased. This result is particularly relevant from a prevention perspective, because plastic lunchboxes represent a clear and practical intervention target. Unlike more structural sources of exposure, lunchboxes can often be replaced with glass, stainless steel, or other safer food-contact materials without requiring major changes in household infrastructure.

The result for **ordering food in plastic packaging** was close to conventional statistical significance ($p = 0.063801$) but did not reach the $p < 0.05$ threshold. Interestingly, the pattern did not show a clearly favourable shift. This is an important implementation finding, because takeaway packaging is often not fully controlled by the consumer. Even a motivated user may have limited influence over whether a restaurant, delivery platform, or local food provider uses plastic packaging. **This illustrates a key LIFE message: some exposure pathways can be changed by individual action, whereas others require changes in product systems, service models, or regulation.**

For the remaining behaviours, including **eating canned food, ordering food in plastic packaging, take-out drinks, heating food in plastic, bamboo or melamine tableware, capsule coffee, coated pans, plastic kettles, and plastic bottles**, no statistically significant within-user change was observed. This does not mean that these sources are unimportant. Rather, it suggests that they may be more resistant to short-term behavioural modification. Some of these behaviours are linked to convenience systems, established routines, available products, or household equipment that cannot be changed immediately. For example, replacing a plastic kettle, changing cookware, avoiding capsule coffee systems, or reducing takeaway packaging may require additional motivation, financial resources, market alternatives, or structural support beyond individual awareness.

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Table 3. Differences between the first and second checks

	1st check				2nd check				p
	Daily	Few times a week	Weekly	Rarely	Daily	Few times a week	Weekly	Rarely	
Eat canned food	25	121	264	556	17	167	251	522	0,36
Eat food in plastic	220	316	214	217	163	316	192	286	0,000177
Order food in plastic	18	82	223	640	24	130	211	590	0,063801
Take out drink	15	65	109	770	19	65	100	765	0,774068
Plastic lunchboxes	118	190	178	470	81	166	209	493	0,006344
Heat food in plastic	26	87	103	738	21	76	100	753	0,253567
Bamboo and melamine tableware	35	61	89	764	30	47	69	793	0,283755
Drink capsule coffee	58	53	74	763	65	39	58	772	0,893451
Use coated pans	196	333	178	253	191	340	177	243	0,769487
Plastic kettles	271	154	98	433	267	141	72	463	0,597439
Plastic bottles	196	146	172	356	250	126	155	419	0,952544

6.2 Cumulative behavioural change despite limited changes in individual items

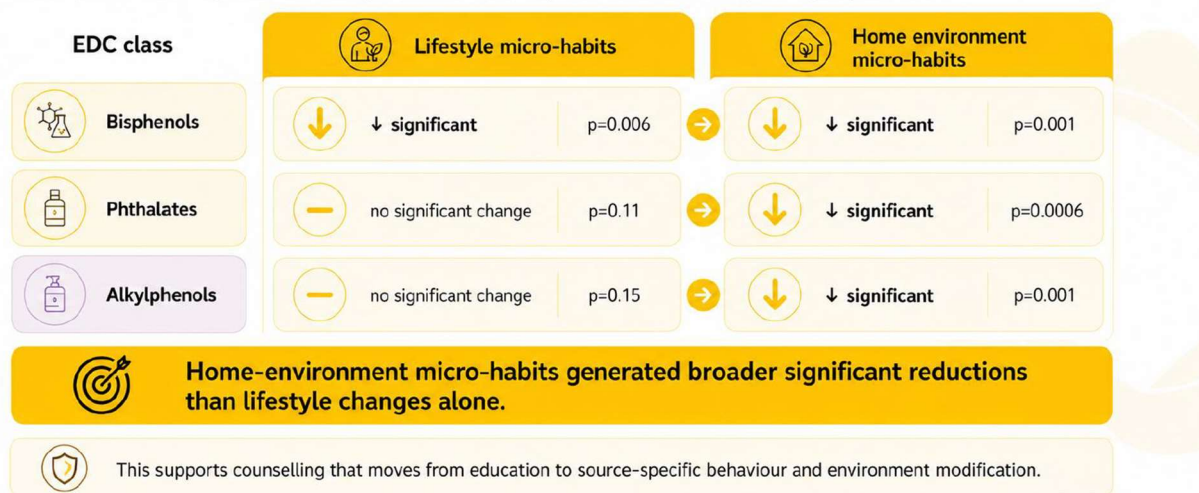
Although statistically significant within-user changes were observed only for selected individual behaviours, this does not exclude a broader reduction in exposure-related scores between the first and second CheckED assessment. From a statistical perspective, this is plausible because the BPA and phthalate indices reflect cumulative exposure patterns rather than the effect of a single product or behaviour. Small, non-significant improvements across several behaviours may not be detectable when each item is analysed separately, especially if the change is modest, heterogeneous across users, or distributed across different exposure sources. However, when these behaviours are combined into an aggregated exposure score, their cumulative contribution may become visible. This may explain why the second check showed a reduction in BPA scores and a numerical decrease in phthalate scores, even though many individual product-use variables did not change significantly. In practical terms, users may have introduced several small modifications rather than one major change: for example, slightly reducing the use of plastic food packaging, replacing some plastic lunchboxes, avoiding plastic contact with hot food, choosing different bottles, or modifying food-storage routines. Each of these changes alone may be too small to produce a statistically significant shift, but together they may contribute to a lower exposure-related profile.

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At the same time, this interpretation should be treated with caution. Alternative explanations are also possible. The observed reduction may partly reflect improved user understanding of the questionnaire during the second assessment, more precise reporting after exposure education, regression to the mean among users with initially higher scores, differences in missing data between the first and second check, or selective return of more motivated users for follow-up. It is also possible that the scoring algorithm is more sensitive to combined patterns of behaviour than to single categorical variables analysed separately. Therefore, the findings should not be interpreted as proof that each specific behaviour changed substantially. Rather, they suggest that repeated self-assessment and user feedback may support a broader pattern of cumulative, small-scale behavioural adjustments that can translate into measurable reductions in exposure-related scores, particularly for BPA and, to a lesser extent, phthalates.

Result 5: micro-habit changes produced measurable reductions

Within-person follow-up showed class-specific and domain-specific reductions in exposure proxy indices.



6.3 Correlations between behaviours and BPA/phthalate exposure scores

The second part of the analysis examined correlations between individual behaviours and BPA or phthalate exposure-related scores at the first and second assessments. This analysis adds biological and behavioural plausibility to the Wilcoxon results. Because the behavioural scale was coded from 1 = daily to 4 = rarely, **negative correlations indicate that less frequent exposure-related behaviour was associated with lower BPA or phthalate scores.** In other words, a **negative correlation is consistent with the expected preventive direction.**

A notable pattern was observed: correlations were generally weak or close to zero at the first assessment but became stronger and more consistent at the second assessment. This suggests that, **after the first CheckED assessment, users may have become more aware** of specific exposure sources, reported their behaviours more precisely, or started to align their behaviours with lower-exposure practices.

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	BPA correlation		Phthalate correlation	
	1st check	2nd check	1st check	2nd check
Eat canned food	-0,113225	-0,251709	-0,046215	-0,186801
Eat food in plastic	-0,012003	-0,290754	-0,045262	-0,225955
Order food in plastic	-0,015584	-0,136836	0,014120	-0,121429
Take out drink	-0,019986	-0,156514	0,008997	-0,113108
Plastic lunchboxes	-0,027262	-0,298156	-0,032349	-0,261301
Heat food in plastic	0,015567	-0,210653	-0,058291	-0,144227
Bamboo and melamine tableware	0,014168	-0,026997	0,012238	0,003116
Drink capsule coffee	-0,043787	-0,096801	0,004723	-0,070650
Use coated pans	-0,043121	-0,332067	-0,047007	-0,323861
Plastic kettles	-0,040840	-0,319386	-0,044514	-0,271549
Plastic bottles	-0,046194	-0,249972	-0,047876	-0,243424

For **BPA**, the strongest negative correlations at the second check were observed for **coated pans** ($r = -0.332$), **plastic kettles** ($r = -0.319$), **plastic lunchboxes** ($r = -0.298$), **eating food in plastic packaging** ($r = -0.291$), **canned food** ($r = -0.252$), and **plastic bottles** ($r = -0.250$). These findings are coherent with the known relevance of food-contact materials for bisphenol exposure. They suggest that the less frequently users reported plastic- or coating-related food-contact behaviours, the lower their BPA-related scores tended to be.

For **phthalates**, a similar pattern was observed. At the second check, the strongest negative correlations were found for **coated pans** ($r = -0.324$), **plastic kettles** ($r = -0.272$), **plastic lunchboxes** ($r = -0.261$), **plastic bottles** ($r = -0.243$), **eating food in plastic packaging** ($r = -0.226$), and **canned food** ($r = -0.187$). This pattern is also biologically plausible, as phthalate exposure can be related to food packaging, plastic materials, processing, storage, and contact with consumer products used in daily routines.

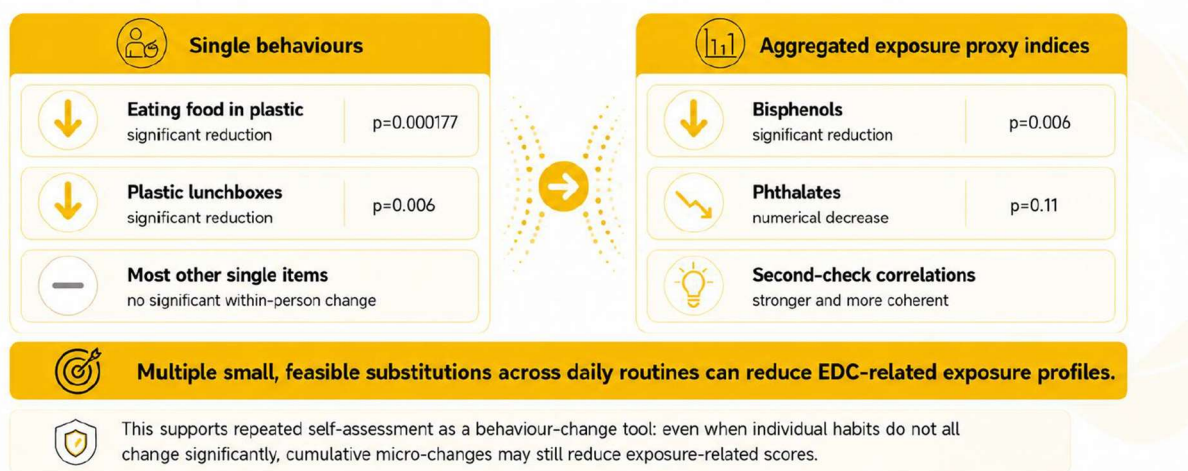
The increase in the strength and consistency of correlations between the first and second check is important from an implementation perspective. It suggests that the second assessment may capture a more informed user profile. After the first check, users may better understand which products and behaviours are relevant and may therefore provide more accurate answers. Alternatively, their behaviours may have changed in a direction that made the relationship between exposure sources and exposure scores more visible. Both interpretations support the value of repeated self-assessment as a behaviour-change tool.

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It is also important to emphasise that the observed correlations were mostly weak to moderate. Therefore, they should not be interpreted as evidence that a single behaviour determines overall exposure. Rather, **they show that several small, repeated behaviours collectively contribute to exposure-related patterns. This is highly relevant for endocrine-disrupting chemicals, because real-life exposure is cumulative and mixture-based.** A plastic lunchbox, a plastic bottle, a coated pan, canned food, or a plastic kettle may each represent only one modest source, but together they contribute to the everyday exposure profile.

Result 6: cumulative micro-habit shifts mattered more than single-product changes

Although most single behaviours did not change significantly, combined small changes were reflected in lower exposure proxy indices.



6.4. Main takeaways

End users can change some exposure-related behaviours, especially when the behaviour is concrete, visible, and easy to replace. The strongest behavioural changes were observed for eating food in plastic packaging and using plastic lunchboxes, both of which are practical and understandable targets for prevention. At the same time, many behaviours did not change significantly over the short term, which shows that awareness alone is not sufficient for all exposure pathways.

Behavioural change is most likely when users are given clear, prioritised, and feasible recommendations. For example, replacing plastic lunchboxes, avoiding food storage in plastic, and reducing direct food contact with plastic packaging may be realistic first-line actions. By contrast, replacing household equipment, changing takeaway systems, avoiding coated cookware, or eliminating plastic packaging from purchased food may require more time, stronger prompts, market availability, financial capacity, and supportive policy measures.

End users matter, but they should not be left alone with the responsibility for chemical exposure prevention. Tools such as CheckED can help translate complex EDC science into practical decisions, identify the most modifiable behaviours, and support users in taking the first steps towards lower exposure. However, **sustainable reduction of exposure also requires safer products, better labelling, accessible alternatives, and systemic changes that make the healthier choice the easier choice.**

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7. What the full result set means for LIFE implementation

Taken together, the attached results support seven implementation messages.

- First, exposure-related patterns differ by sex, which means real-life exposure is behaviorally structured rather than random.
- Second, pregnancy does not automatically lower exposure-related scores, which strengthens the case for dedicated preventive action for women of reproductive age.
- Third, follow-up results suggest that some domains can shift after behavioral change, but others are more resistant because exposure is embedded in products and domestic environments.
- Fourth, real-life EDC prevention is rarely achieved through a single isolated action; it usually depends on multiple small, feasible changes introduced into everyday routines.
- Fifth, the home emerges as a major site of risk and therefore a major site of prevention.
- Sixth, although younger users may present more pronounced high-risk lifestyle behaviours, older users seem to accumulate a more stable background exposure related to long-standing household characteristics, food-storage habits, domestic materials, indoor dust, furnishings, or other less easily modifiable environmental sources.
- Seventh, end-user tools are justified because they make invisible exposure patterns understandable and actionable and are, in themselves learning tools to increase knowledge of the surrounding environment in the daily life of each of us.

7.1. Operational implications for LIFE actions

For LIFE implementation, these findings imply that end users should be treated as a strategic target group rather than a dissemination afterthought. Project actions should combine risk communication with decision support: what to avoid, what to substitute, what to prioritize first, and how to monitor progress. This is especially important for households, pregnant women, parents of small children, and consumers with repeated contact with packaged foods, plastics, cosmetics, or dust-rich indoor environments.

The results also support the use of practical tools such as checklists, digital applications, exposure scores, behavioural prompts, and tailored educational modules. Such tools translate complex toxicology into manageable preventive action, which is exactly the type of bridge LIFE projects are well positioned to create.

7.2. Policy relevance

The findings are also aligned with current EU and international policy directions. WHO identifies EDCs as a public-health concern associated with reproductive problems, obesity, diabetes, cardiovascular disease, and hormone-related cancers, with exposure occurring through consumer products and environmental pollution. The European Environment Agency highlights diet, consumer products, indoor environments, and dust as relevant pathways for human exposure to hazardous chemicals. At EU level, REACH remains the principal framework for protecting human health and the environment from the risks posed by chemicals, while broader policy developments under the zero-pollution and

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sustainable chemicals agenda continue to emphasize the reduction of hazardous chemicals in products.

In this policy context, end-user-centred interventions complement upstream regulation. They provide an immediate route for reducing exposure while regulatory action, market transitions, and product substitution evolve. A LIFE project that equips end users with science-based preventive guidance therefore contributes not only to awareness, but also to the practical delivery of EU environmental-health objectives.

Nevertheless, strengthening regulation and guaranteeing that it is implemented in a timely manner remains the most effective measure to reduce exposure. Results show that even when working with a group with higher awareness, results don't always show. In fact, increase knowledge

8. Policy-oriented conclusion

This report shows that end-users matter because exposure happens in everyday life. One plastic bottle of water is enough to illustrate the problem: when a single repeated contact is scaled to the EU population, it becomes hundreds of millions of daily exposure opportunities and more than 164 billion yearly events in a simplified scenario. And bottled water is only one of many relevant sources.

The results confirm that these exposures are not theoretical. They differ between men and women, persist during pregnancy-related life stages, and appear responsive - at least in part - to reported lifestyle or household changes. This means that end users are both exposed and potentially empowerable.

For LIFE, the policy implication is clear. Impact should not be judged only by the production of knowledge, technologies, or guidance documents. It should also be judged by whether projects change what people do in real settings: what they buy, how they store food, what they drink from, what they use in the home, and how they reduce unnecessary contact with hazardous chemicals. End-user-centred intervention is therefore not secondary to environmental policy; it is one of the most direct pathways through which policy can protect health.

The LIFE ChemBee experience points to a **hierarchy of possible action**. Some measures are **immediately actionable by consumers**, such as avoiding plastic food contact where feasible, replacing plastic lunchboxes, not heating food in plastic, improving dust removal and paying attention to product choices. Other measures are **partially actionable** but depend on availability and affordability, such as choosing safer cosmetics, alternative cookware, lower-emission household products or non-plastic packaging. A third group of measures is largely **systemic**, including the reformulation of products, substitution of hazardous substances, better labelling, safer design of household materials, regulation of food-contact materials and changes in takeaway and retail packaging systems. Effective prevention requires all three levels, but the greatest long-term impact depends on systemic change.

This leads to the central conclusion of the report: yes, end-users matter, but end-users should not be left alone with the responsibility for chemical exposure prevention. LIFE ChemBee shows that empowered consumers can understand complex information, change some practices and become agents of demand for safer products. It also shows that **many barriers are structural, economic or regulatory**. Behavioural **change is most likely when recommendations are feasible, prioritised and linked to daily routines**. It is less likely when action requires major household changes, market alternatives that do not exist or are not easy to access, or decisions controlled by third parties.

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From a **LIFE perspective**, this is a strong and policy-relevant outcome. The **project demonstrates the value of participatory tools, citizen engagement and practical environmental health literacy**. It also **generates evidence** that can support **better policy design**. **End-user empowerment** can help identify exposure pathways, test communication approaches, reveal implementation barriers and **create social demand** for safer products. However, LIFE projects should not be interpreted as a substitute for regulation. Their role is to demonstrate what works, where barriers remain and what needs to change at the system level.

In conclusion, LIFE ChemBee confirms that prevention of hazardous chemical exposure must combine individual empowerment with systemic transformation. Citizens can make meaningful changes, especially when actions are visible, practical and affordable. Women and motivated users may play an important role as early changemakers. Repeated self-assessment can support learning and gradual behavioural shifts. But the **project also makes clear that a toxic-free environment cannot depend on individual vigilance alone, nor is it a fair option considering social justice issues**. The safer choice must become the easier, affordable and default choice. This is the broader lesson of LIFE ChemBee: **end-users matter, but safer systems matter even more**.

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Appendix A. Summary of the attached statistical results

Comparison	Chemical group	Group 1	Group 2	p value	Interpretive note
Lifestyle: men vs women	Bisphenols	5.6058 +/- 2.679	4.22 +/- 2.45	0.000000	Higher in men
Lifestyle: men vs women	Phthalates	6.1151 +/- 3.001	4.55 +/- 2.68	0.001857	Higher in men
Lifestyle: men vs women	Alkylphenols	5.5498 +/- 2.880	4.28 +/- 2.56	0.000000	Higher in men
Lifestyle: men vs women	BFRs	n/r	n/r	0.288522	Not significant
Lifestyle: pregnant vs women	Bisphenols	5.22 +/- 2.64	4.18 +/- 2.44	0.388111	Not significant
Lifestyle: pregnant vs women	Phthalates	5.71 +/- 2.97	4.51 +/- 2.44	0.312250	Not significant
Lifestyle: pregnant vs women	Alkylphenols	5.03 +/- 2.79	4.25 +/- 2.44	0.312250	Not significant
Lifestyle: pregnant vs women	BFRs	n/r	n/r	0.350538	Not significant
Home: pregnant vs women	Bisphenols	29.71 +/- 17.27	29.51 +/- 16.51	0.912957	Not significant
Home: pregnant vs women	Phthalates	32.36 +/- 19.02	29.76 +/- 16.23	0.783007	Not significant
Home: pregnant vs women	Alkylphenols	25.56 +/- 14.72	24.63 +/- 14.03	0.973305	Not significant
Home: pregnant vs women	BFRs	15.87 +/- 10.05	23.80 +/- 15.77	0.045772	Difference observed
Broader: men vs women	Bisphenols	31.0305 +/- 16.019	29.51 +/- 16.53	0.000001	Higher in men
Broader: men vs women	Phthalates	34.1653 +/- 17.860	29.85 +/- 16.34	0.000003	Higher in men
Broader: men vs women	Alkylphenols	26.6253 +/- 13.530	24.67 +/- 14.06	0.000000	Higher in men

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Comparison	Chemical group	Group 1	Group 2	p value	Interpretive note
Broader: men vs women	BFRs	15.9898 +/- 10.183	23.52 +/- 15.67	0.005367	Higher in women
After lifestyle changes	Bisphenols	4.49 +/- 2.59	4.38 +/- 2.45	0.006638	Difference observed
After lifestyle changes	Phthalates	4.86 +/- 2.86	4.78 +/- 2.70	0.118182	Not significant
After lifestyle changes	Alkylphenols	4.53 +/- 2.71	4.53 +/- 2.59	0.154668	Not significant
After lifestyle changes	BFRs	n/r	n/r	0.000000	Means not visible in extraction
After home changes	Bisphenols	29.35 +/- 16.45	30.38 +/- 17.00	0.001493	Difference observed
After home changes	Phthalates	30.32 +/- 16.82	31.03 +/- 16.96	0.000577	Difference observed
After home changes	Alkylphenols	24.72 +/- 13.95	24.80 +/- 14.32	0.001296	Difference observed
After home changes	BFRs	21.42 +/- 14.99	24.15 +/- 15.10	0.010709	Difference observed

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Links for the translated executive summary of “Do end-users matter?”

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FRENCH -

GERMAN - https://www.giftfreie-stadt.de/projekt/life_chembee/

GREEK –

POLISH -

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SWEDISH - https://www.sverigeskonsumenter.se/slutrapport_CB/

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