Insights on "Attitudes towards chemicals"

From the Surveys on Willingness-to-Pay to Avoid Negative Chemicals-Related Health Impacts (SWACHE) Project

Series on Risk Management of Chemicals

OECD
BETTER POLICIES FOR BETTER LIVES

Series on Risk Management of Chemicals

Insights on “Attitudes towards chemicals”

From the Surveys on Willingness-to-Pay to Avoid Negative Chemicals-Related Health Impacts (SWACHE) Project

Please cite this publication as:

OECD (2024), *Insights on "Attitudes towards chemicals" From the Surveys on Willingness-to-Pay to Avoid Negative Chemicals-Related Health Impacts (SWACHE) Project*, OECD Series on Risk Management of Chemicals, OECD Publishing, Paris.

About the OECD

The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental organisation in which representatives of 38 countries in North and South America, Europe and the Asia and Pacific region, as well as the European Union, meet to co-ordinate and harmonise policies, discuss issues of mutual concern, and work together to respond to international problems. Most of the OECD's work is carried out by more than 200 specialised committees and working groups composed of member country delegates. Observers from several Partner countries, and from interested international organisations, attend many of the OECD's workshops and other meetings. Committees and working groups are served by the OECD Secretariat, located in Paris, France, which is organised into directorates and divisions.

The Environment, Health and Safety Division publishes free-of-charge documents in twelve different series: **Testing and Assessment; Good Laboratory Practice and Compliance Monitoring; Pesticides; Biocides; Risk Management; Harmonisation of Regulatory Oversight in Biotechnology; Safety of Novel Foods and Feeds; Chemical Accidents; Pollutant Release and Transfer Registers; Emission Scenario Documents; Safety of Manufactured Nanomaterials;** and **Adverse Outcome Pathways**. More information about the Environment, Health and Safety Programme and EHS publications is available on the OECD's World Wide Web site (www.oecd.org/chemicalsafety/).

This publication was developed in the IOMC context. The contents do not necessarily reflect the views or stated policies of individual IOMC Participating Organisations.

The Inter-Organisation Programme for the Sound Management of Chemicals (IOMC) was established in 1995 following recommendations made by the 1992 UN Conference on Environment and Development to strengthen co-operation and increase international co-ordination in the field of chemical safety. The Participating Organisations are FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, WHO, World Bank, Basel, Rotterdam and Stockholm Conventions and OECD. The purpose of the IOMC is to promote co-ordination of the policies and activities pursued by the Participating Organisations, jointly or separately, to achieve the sound management of chemicals in relation to human health and the environment.

Executive Summary

Chemicals are the building blocks for products and processes and provide an array of useful functions. They are also released from industrial and consumer sources into the environment and depending on their use, humans are directly exposed. However, some chemicals can have negative impacts on human health and the environment and need to be properly managed. Chemical management programmes in countries and within industry seek to reduce and limit the negative impacts of chemicals.

The “Surveys on Willingness-to-Pay to Avoid Negative Chemicals-Related Health Impacts” (SWACHE) project supports the socio-economic analysis of chemicals by helping to better quantify the monetary benefit of reducing morbidity of chemicals to fill the knowledge gap of the cost of policy inaction when countries set up national chemical management programmes.

In the context of these surveys, the OECD also included a series of questions about the respondents’ attitudes towards their exposure to harmful chemicals and the need for action by governments and industry to reduce exposure to harmful substances.

The present analysis of responses to the attitudinal questions show that the public is generally aware of the hazards of chemicals and how they can be exposed, are taking action in their everyday lives to reduce exposure and overwhelmingly support stronger action by governments and the chemical industry to reduce the presence and emission of harmful substances.

Almost three out of four respondents said they were aware of the health risks associated with chemicals and while there is some variation among countries, at least 50% of respondents across all countries confirmed their awareness. Likewise, the majority of respondents (62%) said that they were aware of the ways in which they can be exposed to harmful chemicals. Nevertheless, there appeared to be increased uncertainty about ways of exposure as inferred from the higher proportion of respondents neither agreeing nor disagreeing with the statement.

Respondents appeared to be more concerned about their exposure to products and product packaging containing harmful substances outside their home compared to inside, and concern was higher among younger people.

More than two thirds of respondents claimed to take daily action to reduce their exposure to harmful substances with action being taken more frequently with increasing age. Similarly, the older the respondents, the more likely they were to say they had an obligation to future generations to reduce their exposure, with an average of over 80% agreeing across all ages.

Respondents expressed a moderate amount of uncertainty whether harmful substances were sufficiently regulated in their country and there was considerable variation among countries in confidence of their country’s regulation. There was, however, overwhelming support for stronger government action to reduce the presence of harmful chemicals in products of daily use as well as their emission to the environment (82%). Support for stronger action taken by business and industry was even stronger (84%) and as for government action increased with age.

Table of contents

Tables

Figures

Boxes

1 Background

Chemicals are the building blocks for products and processes and provide an array of useful functions. They are also released from industrial and consumer sources into the environment and depending on their use, humans are directly exposed. However, some chemicals can have negative impacts on human health and the environment and need to be properly managed. Chemical management programmes in countries and within industry seek to reduce and limit the negative impacts of chemicals.

The OECD has worked with governments and industry since the 1970s to improve chemical safety and biosafety and also to harmonise approaches to their assessment and management in order to save resources for both government and industry.

More recently, the OECD has undertaken two projects to support the socio-economic analysis of chemicals by helping to better quantify the monetary benefit of reducing their morbidity and environmental impacts, the so-called "Surveys on Willingness-to-Pay to Avoid Negative Chemicals-Related Health Impacts (SWACHE)" and "Socio-economic Analysis of Chemicals by Allowing a better quantification and monetisation of Morbidity and Environmental impacts" (SACAME) projects[1].

The SWACHE project brings together expertise on chemical safety and economic analysis to fill the knowledge gap of the cost of policy inaction when countries set up national chemical management programmes as it aims to establish internationally comparable values for the willingness-to-pay (WTP) to avoid negative health effects due to exposure to chemicals. Such values can be used to demonstrate and measure the economic benefits of minimising the impacts of chemicals on human health.

To derive WTP values, surveys of a large number of citizens of countries have been conducted under the SWACHE project. Particularly, these stated preference surveys provide data that can shed light on the disutility in terms of symptoms and lower quality of life of a given disease or health effect, which is not captured by existing metrics such as those based on the cost of illness.

The SWACHE project is organised in two rounds focusing on 5 health effects each. The first round of health effects includes asthma, infertility, IQ loss, chronic kidney disease and very low birth weight. The first round of surveys was implemented in 2022 in at least five countries each where representative samples of at least 1 200 respondents each were collected. Survey responses are empirically analysed to estimate mean WTP for a given reduction in health risk for each country surveyed. The second round of health effects will include thyroid dysfunction, miscarriage, hypertension, non-fatal cancer and skin sensitisation and is currently being carried out.

The first round of surveys clearly indicates that people are willing to pay a significant amount to reduce their risk of developing various negative health effects. The value of a statistical case is estimated in USD Purchasing Power Parity (PPP) from USD 91 000 for infertility to USD 1 194 000 for very low birth weight, on average, across the countries surveyed. The results of this first round are presented in five working

[1] For further information on the "Surveys on Willingness-to-Pay to Avoid Negative Chemicals-Related Health Impacts (SWACHE)" and "Socio/economic Analysis of Chemicals by Allowing a better quantification and monetisation of Morbidity and Environmental impacts (SACAME) project, see: https://www.oecd.org/chemicalsafety/risk-management/costs-benefits-chemicals-regulation.htm.

papers, one for each health effect (Appéré et al., 2023[1]; Dockins et al., 2023[2]; Dussaux et al., 2023[3]; Ščasný, Zvěřinová and Dussaux, 2023[4]; Mourato et al., 2023[5]). Overall, the WTP values estimated by the SWACHE project provide significant evidence that chemicals management systems are worth implementing.

In the context of the first round of surveys, the OECD also included a series of eleven questions and statements regarding the respondents' attitudes towards their exposure to harmful chemicals and the need for action by governments and the chemical industry to reduce the public's exposure to harmful substances. The questions and statements were grouped into four categories:

1. Awareness of health risks and the ways of exposure:
    i. I am aware of the health risks associated with harmful chemicals.
    ii. I am aware of the ways I can be exposed to harmful chemicals.
2. Perceived exposure to harmful substances:
    i. How frequently do you think you are exposed to products and product packaging containing harmful chemicals in your home?
    ii. How frequently do you think you are exposed to products and product packaging containing harmful chemicals outside your home?
    iii. I try to reduce exposure to harmful chemicals and chemical products in my daily life.
    iv. We have an obligation to future generations to do whatever we can to reduce exposures to harmful chemicals.
3. The role of government:
    i. The use of harmful chemicals is sufficiently regulated in my country.
    ii. Governments should take stronger action to reduce the presence of harmful substances in products of daily use.
    iii. Governments should take stronger action to reduce emissions to the environment of harmful substances.
4. The role of business and industry:
    i. Business and industry should take stronger action to reduce the presence of harmful substances in products of daily use.
    ii. Business and industry should take stronger action to reduce emissions to the environment of harmful substances.

A review of previous literature and research into public opinions on chemicals and the risks associated with them shows that much of the literature is focused on the public's attitudes towards chemistry and chemicals in general and what has been termed "chemophobia" (Schummer, Bensaude-Vincent and Van Tiggelen, 2007[6]; Entine, 2011[7]; Francl, 2013[8]; Rulev, 2021[9]) . A 2015 research report by the Royal Society of Chemistry based on a series of qualitative workshops as well as quantitative surveys conducted in the United Kingdom found that a majority of respondents displayed neutral feelings towards both chemistry and chemicals but only 54% of respondents felt informed about chemicals in their daily lives (TNS BRMB, 2015[10]).

A cross-sectional observational qualitative study conducted in seven European countries the context of the European Human Biomonitoring Initiative (HBM4EU[2]) found that participants expressed the biggest concern about exposure to chemicals from the consumption of food (Matisāne et al., 2022[11]), which confirms earlier study findings (Lee, 1986[12]). In general, long-term health effects were the respondents' biggest concern when asked about exposure to chemicals. Similarly, Uhl et al. conducted focus groups in Austria, Portugal, Ireland and the UK which revealed a general concern regarding chemical exposure on the public's health and their daily lives (Uhl et al., 2021[13]).

Uhl et al.'s qualitative study also revealed citizens' lack of trust in governing authorities as some participants expressed concern that governments protected industry as a result of their role in the economy, and that there was a disproportionate emphasis on consumers' responsibility as opposed to industry in terms of preventing exposure to chemicals. The 2020 EU Special Eurobarometer on Attitudes of European citizens towards the Environment not only confirmed that an overwhelming majority of the public are concerned about the impact on their health of chemicals present in everyday products (85%) as well as their impact on the environment (90%), but also that 72% of respondents said that their government is not doing enough to protect the environment while 80% said that industry is not doing enough to protect the environment (EC DG COMM, 2020[14]). Similarly, a 2022 poll conducted by the University of California of 1,200 registered US voters found that 54% of respondents were of the opinion that chemical regulations are not strong enough and with 93% agreeing that companies should do a better job at removing harmful chemicals from consumer products (Program on Reproductive Health and the Environment, 2022[15]).

The most comprehensive survey conducted regarding public opinion on chemicals was the 2017 Special Eurobarometer on chemical safety conducted in 28 Member States of the European Union that gathered data from 27 929 EU citizens (EC DG COMM, 2017[16]). The report found that 65% of EU citizens are at least "a little" concerned about their exposure to chemicals in daily life and less than half (45%) feel well informed about the potential dangers of chemicals contained in consumer products, with substantial variation between countries in the proportions that feel well informed, ranging from over 65% in Denmark, Finland, Slovenia, the Netherlands and Sweden to much lower proportions in Greece (32%), Spain (34%), the Czech Republic (35%) and Italy (36%). The survey also found large variation in between EU Member States in attitudes towards the current level of regulation and standards in the EU: respondents in Greece (72%) and Sweden (67%) felt that the current level is not high enough and should be increased, whereas respondents in Finland (52%), Hungary (47%), Poland (43%) and Slovakia (43%) found the current level is right.

The expanded country coverage makes an important contribution to the body of literature on attitudes towards chemicals. However, the majority of existing studies and surveys have been carried out within the European Union, providing a limited perspective on opinions and attitudes from non-EU countries. The analysis of questions included in the SWACHE surveys and presented in this paper, by contrast, covers 22 countries, only eight of which are in the European Union, providing a broader view of people's attitudes towards chemicals.

[2] For further information on the European Human Biomonitoring Initiative, see: https://www.hbm4eu.eu/

2 Methodology

Background on survey design

Information on the survey design for the SWACHE project is provided here as background for how the data on attitudes were collected. Details on SWACHE survey design and development can be found in **Box 2.1**.

The SWACHE project is organised in two rounds focusing on 5 health effects each. The first round of the SWACHE project focused on the following five health effects:

- Asthma
- Infertility
- IQ loss
- Chronic kidney disease
- Very low birth weight

The first round of surveys was implemented in at least five countries each where representative samples of at least 1 200 respondents each were collected. Overall, one to five of the surveys were implemented in 22 countries, totalling 46 surveys conducted. Fieldwork, pilot and main stage, took place between June 2021 and June 2022 for the first round of surveys. Some surveys had specific requirements regarding the target population due to the endpoint under consideration.

Box 2.1. SWACHE survey design and development

Each SWACHE survey questionnaire was drafted by a team of authors that includes recognised experts in the field of stated preference surveys related to health impacts as well as practitioners in the socio-economic analysis (SEA) of chemicals management options.

Each survey questionnaire was developed in several steps. First, a description of the health effect (endpoint) was drafted including information about the related quality-of-life health impact, a review of any prior stated preference studies on the same health effect and suggestions for how to characterise the endpoint in a new study. Second, various valuation scenarios were developed describing the target population, the risk reduction mechanism, the payment vehicle and the elicitation method. Third, a complete draft survey questionnaire was developed including the most appropriate valuation scenario.

All SWACHE survey instruments featured a harmonised introduction that contains language to minimise non-response bias and comply with ethics principles. The informed consent of all participants to the surveys was collected by the internet panel provider. All survey response data are anonymised and participation in the survey was voluntary. In addition, best practices in terms of safe data storage are applied.

All survey questionnaires also include language to minimise non-response bias within the questionnaire. The questionnaires also included harmonised debriefing questions to collect data on predictors of WTP such as income and age but also questions to control for non-response bias in empirical analysis. For instance, respondents were asked how much they agree with the following statements:

- I responded to the survey as I would have done in real life.
- The survey provided me with enough information to make informed choices.
- Did you agree or disagree with the description of [health effect] provided in this survey?

All survey questionnaires included a series of debriefing questions specific to the health effect valued in order to capture potential co-benefits or protests linked to the risk reduction mechanism. These survey specific questions are described in individual working papers.

Finally, all draft surveys questionnaires were tested in at least ten one-on-one interviews with people of various background and characteristics in an English-speaking country and in a non-English speaking country. The survey questionnaires were programmed and extensively tested. The translation into languages of target countries was verified by native speakers. Some surveys benefited from a pre-pilot to further revise the survey questionnaires.

Each survey questionnaire was piloted in all target countries with 50 survey responses per country. The pilots allowed for calibration of the bid levels that were presented to respondents to maximise the even distribution of responses across the four possible outcomes of the double bounded dichotomous choice.

Source: Adapted from (Dockins et al., 2023[2]).

SWACHE survey design: Questions on attitudes towards chemicals

The questions regarding respondents' attitudes towards chemicals that are explored in the present report were included after the survey questions relating to the SWACHE project, which included a short section informing respondents about the risks posed by chemicals. The information provided was specific to the respective endpoint (see **Box 2.2** for an example of the information provided). In this context, it cannot be ruled out that respondents' attitudes towards the potential harm of chemicals may have been influenced.

Box 2.2. Example of risk description in SWACHE surveys

All surveys included background information on the possible causes of the respective health effect, including toxic chemicals, such as the following provided in the survey on infertility:

Many factors contribute to infertility including the age, genetics and lifestyle (incl. alcohol consumption, smoking, very high or low body mass index) of both partners.

Chemicals also play an important role as people are increasingly exposed to substances that may disrupt the hormone system or affect sperm and egg quality.

Source: (Dussaux et al., 2023[3])

The questions regarding respondents' attitudes towards chemicals that are explored in the present report were presented in two different question types using two different Likert scales. Nine out of the eleven statements used a five-point Likert scale that present respondents with a statement to which they were asked to indicate their agreement, ranging from strong disagreement to strong agreement. The remaining two questions asked respondents about the frequency with which they thought they were exposed to harmful chemicals in specific contexts to which response options ranged on a four-point Likert scale from never to constantly (see 4Annex A for the full list of questions and response options).

Table 2.1. Response scales

5-point agreement scale	4-point frequency scale
Strongly disagree	Never
Somewhat disagree	Occasionally
Neither agree nor disagree	Frequently
Somewhat agree	Constantly
Strongly agree	-

Survey data

The analysis on attitudes builds on the results of four of the five surveys conducted in the first round of the SWACHE report. Both the IQ Loss and Chronic Kidney Disease Valuation surveys targeted the general population, representative for each country based on quotas matching key country-specific demographics such as gender, age group, level of education, and geographic region. The Very Low Birth Weight and Infertility Valuation surveys targeted males (aged 18-65) and females (aged 18-45) who were planning to have a biological child within the next 5 years, including those who were currently expecting a child and wished to have another child within the next 5 years. The Asthma Valuation Survey was excluded from the present analysis as it featured a very specific target population where asthmatic adults and parents of an asthmatic child were oversampled.

The surveys included were implemented in a total of 20 countries from June 2021 to June 2022, including fieldwork, pilot and main stage. The study applied a two-staged screening process to ensure informed preference elicitation: After completion, the survey data were evaluated by several quality markers (survey completion time and speeding, straight lining and proportion of "don't know" answers) that resulted in an overall quality score for each respondent. Consequently, a number of interviews were removed from the final data as they did not pass a lower threshold for this quality score. In a second step, additional screening was carried out to exclude speeders, defined as respondents completing the entire questionnaire and the

valuation section faster than 48% of the median in their respective country, as well as respondents who failed the probability quiz. Since the concept of probability was used to describe health characteristics of the population as well as to elicit preferences for reducing risks of undesirable health outcomes, special attention was paid to communicating information about risk. Therefore, a tutorial on risk followed by a simple quiz was included in the survey and respondents who failed to correctly answer the quiz were eventually excluded from the main data analysis. **Table 2.2** indicates the number of high-quality surveys per country that formed the basis of this analysis.

The survey results on attitudes presented are predominantly drawn from the general population (as gathered from the IQ Loss and Chronic Kidney Disease Valuation surveys). Results from the targeted population of males and females planning to have a biological child within the next 5 years (as gathered from the Very Low Birth Weight and Fertility Loss Valuation surveys) closely echo the findings from the general population throughout and are therefore reported on only in abbreviated form to avoid repetition. **Table 2.2** indicates which country was surveyed for the general and or the targeted population.

To account for differences between achieved and target quotas, a post-stratification weighting procedure was carried out to adjust the samples to selected population totals. The principle behind this type of weighting is that by aligning the sample and population on key variables for which population statistics are known, the accuracy of the other variables in the survey (which may have been affected by non-response or coverage bias) is expected to be improved (for further details see (Mourato et al., 2023[5])).

Table 2.2. Countries and number of high-quality surveys

Country	Number of high-quality survey responses	General Population	Targeted population: heterosexual couples planning to have child within the next 5 years
Australia	2 155	x	x
Canada	3 974	x	x
Chile	1 981	x	x
Czechia	838		x
Denmark	2 096	x	
Germany	2 002	x	x
Italy	1 851	x	x
Japan	929		x
Korea	1 183	x	
Mexico	754		x
Netherlands	1 918	x	x
Norway	1 030	x	
Poland	2 384	x	x
Portugal	2 145	x	x
South Africa	1 152	x	
Sweden	2 154	x	x
Switzerland	765		x
Türkiye	1 498	x	x
United Kingdom	4 022	x	x
United States	3 844	x	x

All surveys included questions about the respondents' socio-demographic characteristics, such as age group, level of education, and gender that have been used in the analysis to disaggregate the data. For level of education, the lower and medium education levels were combined due to the very low proportion of respondents with lower education levels, resulting in two categories: lower or medium education and higher education. The age group segmentation differs between the general population and the targeted

population as for the latter only men and women of child-bearing age were included (see **Table 2.3**). Furthermore, in this analysis results from respondents of the general population who replied to the question of their gender with either “other” or “prefer not to say” were excluded, due to their low number and in order to improve comparison between general and targeted population.

In addition to country results, the OECD average was included in the report findings. The OECD average was calculated as the mean of the data values for all OECD countries included in the present dataset and does therefore not take into account the absolute size of the population in each country.

Table 2.3. Differences in age groups for general population and targeted population of heterosexual couples planning to have child within the next 5 years

Age Group	General Population	Targeted population: Heterosexual couples planning to have child within the next 5 years
1	18-29	18-24
2	30-44	25-34
3	45-59	35-39
4	60+	40-44
5	-	45-65

3 Survey Results

Awareness of health risks and ways of exposure

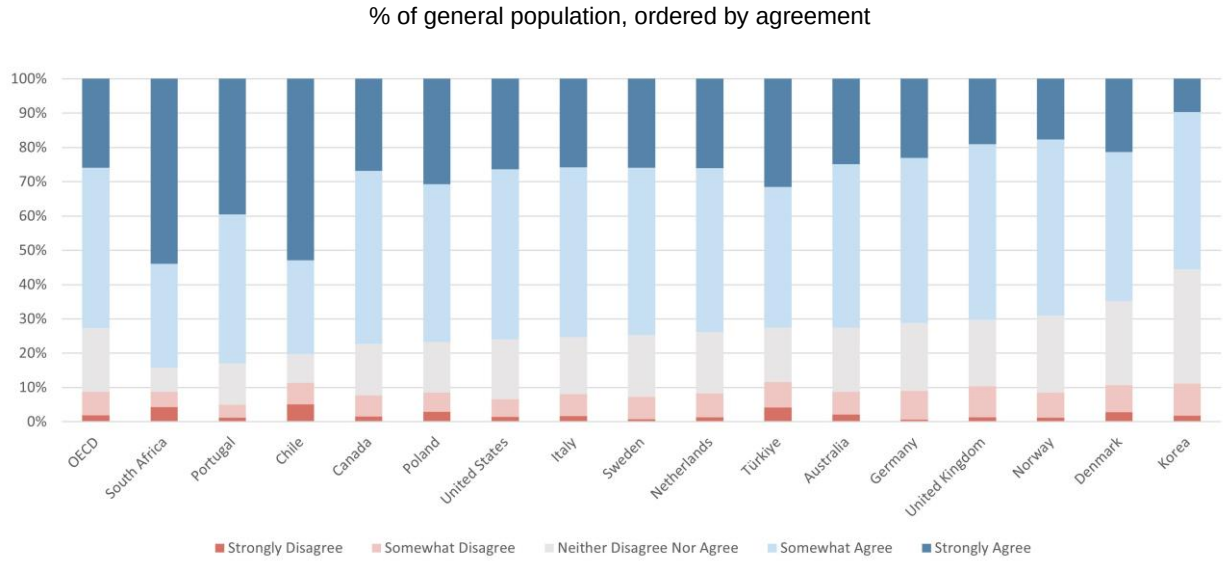
Respondents were presented with two statements regarding their awareness of health risks associated with and the ways they can be exposed to harmful chemicals:

1. I am aware of the health risks associated with harmful chemicals.
2. I am aware of the ways I can be exposed to harmful chemicals.

Almost three out of four respondents (73.3%) indicate that they are aware of health risks associated with harmful chemicals and only 8.8% stating that they are not aware of risks. There is considerable variation between countries in the proportions of respondents that strongly agree with the statement "I am aware of the health risks associated with harmful chemicals", but at least over half of respondents across all countries agree either "strongly" or "somewhat".

South Africa (84.3%), Portugal (83%) and Chile (80%) are the countries with the highest percentage of respondents agreeing with the statement, whereas only 55.6% of Korean respondents and 64.8% of Danish respondents agree with the statement.

Figure 3.1. I am aware of the health risks associated with harmful chemicals



The same pattern emerges when looking at respondents' awareness of the ways they can be exposed to harmful chemicals. Almost two thirds (62.1%) of respondents agree with the statement and only 12.9% disagree, with the most of the same countries having the highest as well as lowest percentages of

respondents agreeing: Percentages above 70% in South Africa (76.1%), Portugal (73.3%), and Chile (71.8%) compared to less than 50% in Norway (48.3%) and Korea (35.9%) (see **Figure A B.1**).

However, the percentage of people neither agreeing nor disagreeing is more prevalent for awareness of exposure when compared to the statement regarding health risks associated with chemicals (25% compared to 17.8%), which points to higher uncertainty about exposure among respondents compared to health risks associated with chemicals.

Very similar percentages were observed in the analysis of respondents of the targeted population of couples who were planning on having children in the following five years, with 71.3% (versus 73.3% in the general population) of respondents stating that they are aware of the health risks associated with harmful chemicals and 64.9% (versus 62.1% in the general population) of respondents saying they are aware of the ways they can be exposed.

Looking at differences between socio-demographic groups, it appears that awareness of the health risks associated with harmful chemicals increases with age: 81.6% of respondents aged 60 and more agree, compared to 66.5% of respondents aged 18-29 (see **Figure 3.2**). A similar trend can be discerned for awareness of exposure, although the differences are less pronounced: 66.3% of respondents aged 60+ versus 58.8% of respondents aged 18-29.

This tendency of increasing awareness with increasing age was also observed among heterosexual couples planning to have child within the next 5 years, where 70% of respondents aged 18-24 claim to be aware of health risks associated with harmful chemicals compared to 81.2% for respondents aged 45-65, although differences were smaller as were the age differences (see **Figure A B.2**).

Figure 3.2. I am aware of the health risks associated with harmful chemicals – by age

by age group, % of general population

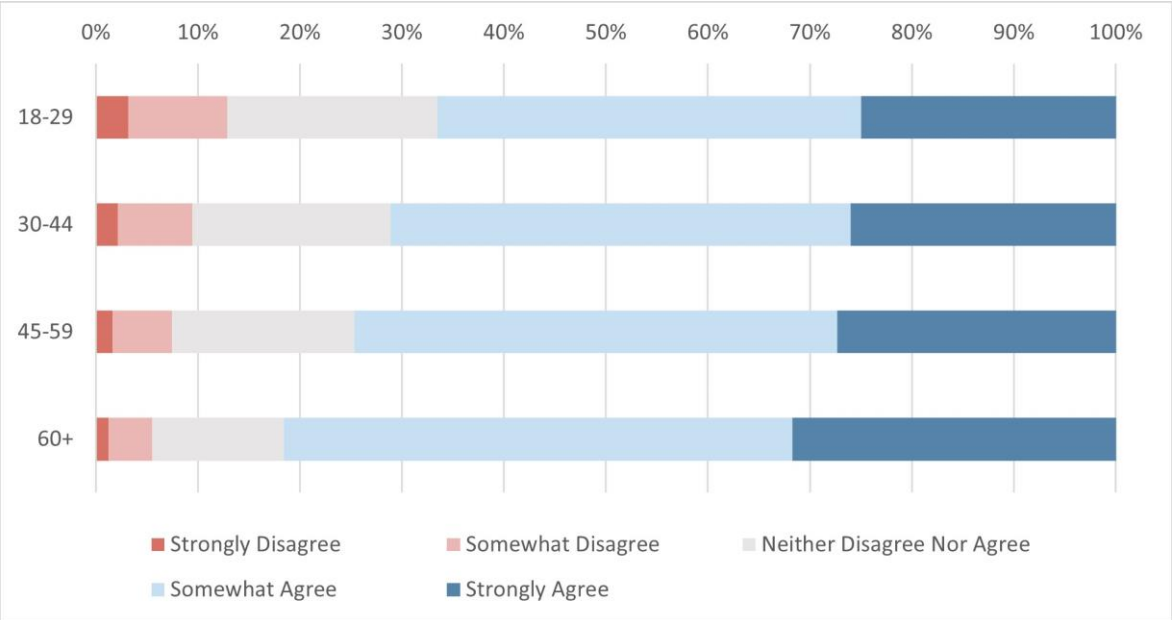


Table 3.1 shows detailed results for both awareness of health risks associated with harmful chemicals (highlighted in blue) and awareness of exposure (highlighted in orange) by socio-demographic group. There are no significant differences in responses between female and male respondents or respondents with different education levels.

Table 3.1. I am aware of the health risks associated with harmful chemicals / I am aware of the ways I can be exposed to harmful chemicals

% of general population

	Strongly disagree		Somewhat disagree		Neither disagree nor agree		Somewhat agree		Strongly agree	
All countries	2.0	2.5	6.8	10.5	18.9	25	46	43.5	27.4	18.6
OECD average	1.9	2.4	6.9	10.7	18.5	25.7	46.8	43.9	25.9	17.4
Age Group										
18-29	3.2	3.6	9.7	12.7	20.6	24.9	41.5	39.5	25	19.3
30-44	2.2	2.7	7.3	11	19.4	25.7	45	41.4	26	19.2
45-59	1.7	2.2	5.8	9.8	17.9	25.2	47.3	45	27.3	17.8
60+	1.2	1.4	4.3	8.4	12.9	23.9	49.9	48.3	31.7	18
Gender										
Female	1.9	2.5	6.7	11.1	17.9	25	46.4	43.7	27	17.7
Male	2.2	2.4	6.7	9.8	17.8	25	45.4	43.3	27.8	19.5
Education level										
Lower/ medium	2.4	2.7	6.9	10.1	18.1	25.6	43.2	41.5	29.4	20.1
Higher	1.5	2	6.6	11.1	17.4	24.1	50.3	46.7	24.2	16.2

Note: Results highlighted in blue report responses to the statement "I am aware of the health risks associated with harmful chemicals" and results highlighted in orange report responses to the statement "I am aware of the ways I can be exposed to harmful chemicals".

Perceived exposure to harmful substances

The survey contained two questions and two statements regarding the respondents' perceived exposure to harmful substances:

1. How frequently do you think you are exposed to products and product packaging containing harmful chemicals in your home?
2. How frequently do you think you are exposed to products and product packaging containing harmful chemicals outside your home?
3. I try to reduce exposure to harmful chemicals and chemical products in my daily life.
4. We have an obligation to future generations to do whatever we can to reduce exposures to harmful chemicals.

When asked how often respondents thought they are exposed to products and product packaging containing harmful chemicals inside and outside their home, the most frequent response in almost all countries is "occasionally". 42.4% of respondents believe they are occasionally exposed inside their home, more than a quarter of respondents (25.7%) believe that exposure is frequent and over 10% believe they are constantly exposed to harmful chemicals inside their home. Respondents appear to be even more concerned about exposure outside their home, with 15.8% believing they are exposed constantly and 31.5% believing that exposure is frequent (see **Figure 3.3** and **Figure 3.4**).

Figure 3.3. How frequently do you think you are exposed to products and product packaging containing harmful chemicals in your home?

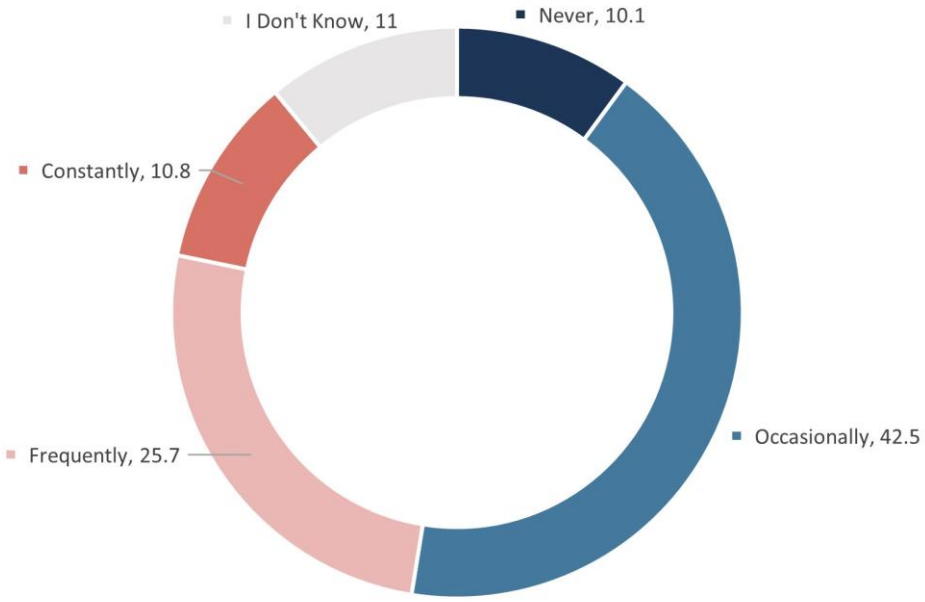
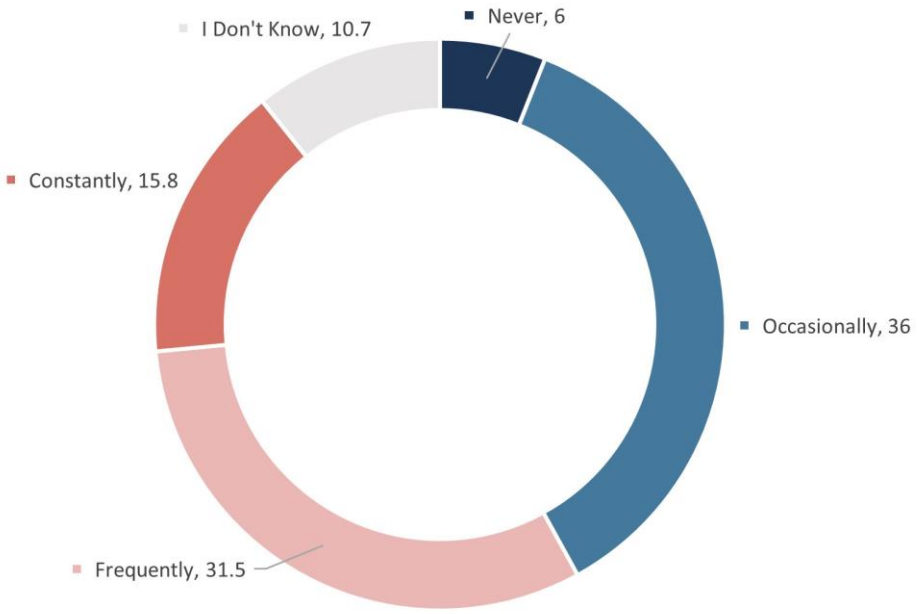


Figure 3.4. How frequently do you think you are exposed to products and product packaging containing harmful chemicals outside your home?



:

Regarding exposure inside the home, Chile appears to be the least concerned, with 20.5% of respondents stating that they believe they are never exposed, followed by Italy (17.1%) and Germany (17%). The same countries also have the largest share of respondents believing to never be exposed outside their homes: 13.5% in Chile, 11.1% in Germany and 9.2% in Italy. On the other end, South Africa (19.4% and 26% respectively), Sweden (17.5% and 21.6% respectively) and Korea (15.3% and 21.7%) have the largest proportion of respondents that consider themselves being exposed constantly, inside and outside their homes. **Figure A B.3** and **Figure A B.4** in Annex B give an overview of all countries surveyed.

When comparing different socio-demographic groups, the most pronounced differences were found between different age groups: the percentages of respondents believing they are either constantly or frequently exposed inside and outside their homes was highest for age groups 18-29 and 30-44 (see **Table 3.2**). This contrasts with the observed tendency of older respondents being more aware of health risks as well as being more likely to take action to reduce exposure to harmful chemicals. Women are also found to be slightly more concerned regarding their exposure inside than men, especially outside their home where 17% believe themselves to be constantly exposed in comparison to 14.5% of men.

The results of heterosexual couples planning to have child within the next 5 years mirror those of the general population closely: the largest proportion of respondents believe to be exposed "occasionally" (43% inside the home / 32.6% outside the home), followed by "frequently" (30.9% inside the home / 37.4% outside the home) and "constantly" (12.7% inside the home / 19.2% outside the home). The younger age groups (18-24 and 25-34) are also the ones who are more likely to be exposed "frequently" or "constantly" (see **Figure A B.5**, **Figure A B.6** and **Table A B.1** in Annex B for sociodemographic details and a country overview).

Table 3.2. How frequently do you think you are exposed to products and product packaging containing harmful chemicals inside / outside your home?

% of general population

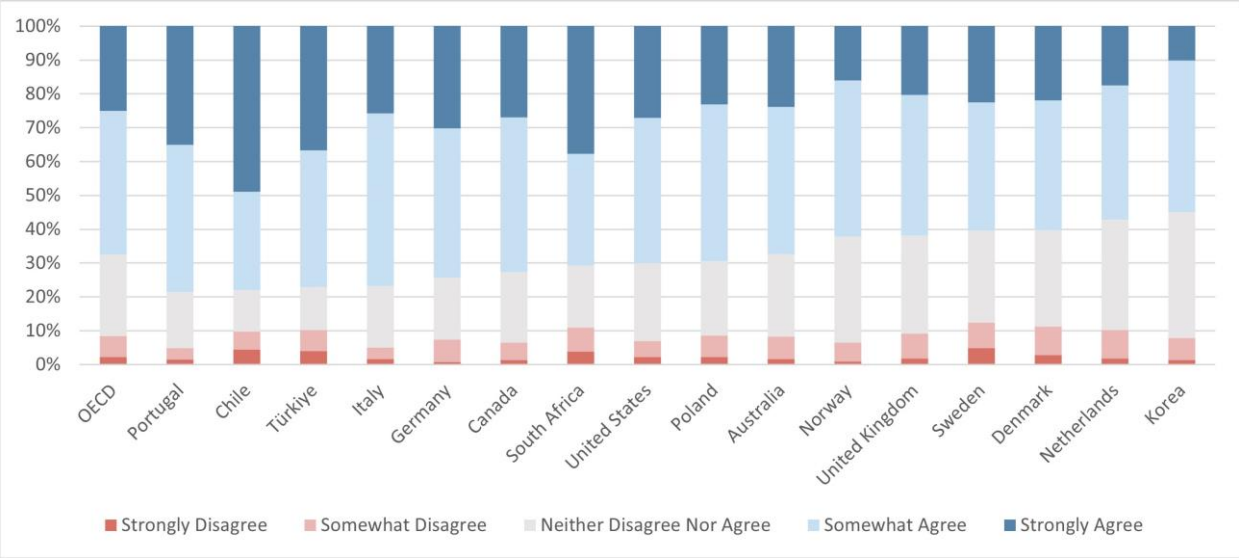
	Never		Occasionally		Frequently		Constantly		I Don't Know	
All countries	10.1	6	42.5	36	25.7	31.5	10.8	15.8	11	10.7
OECD average	10.1	6	43	36.4	25.6	31.5	10.3	15.3	11	10.8
Age Group										
18-29	1.5	6.9	40	32.2	26.6	32	11.6	19.4	10.4	9.6
30-44	9.7	5.5	40.6	33.6	27	33.2	12.2	17.2	10.6	10.5
45-59	9.7	6	43.1	37.4	25.4	30.9	10.3	14.8	11.6	10.9
60+	9.8	5.7	46.7	41.3	23.5	29.7	8.8	11.6	11.4	11.6
Gender										
Female	9	5.5	41.9	33.9	26.6	32.4	10.9	17	11.6	11.3
Male	11.3	6.6	49.1	38.2	24.7	30.7	10.6	14.5	10.3	19.5
Education level										
Lower/ medium	10.8	6.6	41.2	34.6	25.7	31.4	10.5	16	11.8	11.4
Higher	8.9	5.1	44.5	38.2	25.7	31.8	11.2	15.5	9.7	9.4

Note: Results highlighted in blue report responses to the question "How frequently do you think you are exposed to products and product packaging containing harmful chemicals inside your home?" and results highlighted in orange report responses to the question "How frequently do you think you are exposed to products and product packaging containing harmful chemicals outside your home?".

When asked about their own actions to reduce exposure to harmful chemicals and products in their daily lives, a large majority across all countries (67%) state that they do so actively. The highest proportions of respondents that agree either somewhat or strongly with the statement "I try to reduce exposure to harmful chemicals and chemical products in my daily life" are Portugal (78.6%), Chile (78%), Turkey (77.1%) and Italy (76.8%), well above the OECD average of 67%. Almost a quarter of all respondents (23.9%) neither agree nor disagree with the statement.

Figure 3.5. I try to reduce exposure to harmful chemicals and chemical products in my daily life

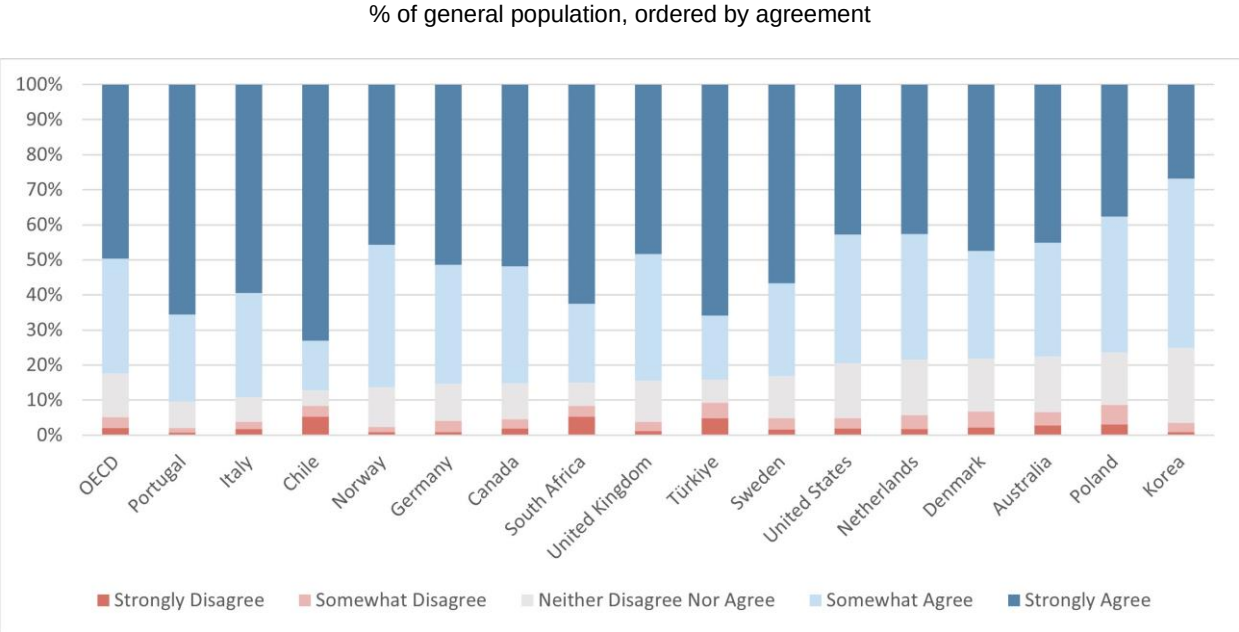
% of general population, ordered by agreement



A slightly higher proportion of women (68.9%) than men (66%) state that they make daily efforts to reduce their exposure to harmful chemicals, as do respondents with higher education level (70%) compared to respondents at lower or medium education level (66.2%). Action to reduce exposure also seems to increase with increasing age: 73.4% of respondents aged 60+ agree, in comparison to 59.2% of those aged 18-29 (see **Table 3.3**).

On average, 68% of the couples planning to have a child state that they are taking action in their daily lives to reduce exposure, and 77.3% older respondents (aged 45-65) agree compared to 64.5% of respondents between the ages 18-24. Men and women are equally likely to agree (67.8%) and agreement is slightly higher for respondents with a higher education level (69.4%) than those at lower or medium education level (66.8%).

Figure 3.6. We have an obligation to future generations to do whatever we can to reduce exposures to harmful chemicals



Respondents' concern about the exposure of future generations is even stronger: When presented with the statement "We have an obligation to future generations to do whatever we can to reduce exposures to harmful chemicals", 82.6% of respondents agree either somewhat or strongly (see **Figure 3.6**). The same socio-demographic pattern as when asked about actions about their own exposure can be discerned among respondents: 89% of respondents aged 60+ agree with the statement compared to 74.9% of respondents aged 18-29; women are slightly more likely to agree (84.6%) than men (80.5%), as are respondents who have a higher education diploma (84.9%) compared to those without (81.1%) (see **Table 3.3**).

Table 3.3. I try to reduce exposure to harmful chemicals and chemical products in my daily life / We have an obligation to future generations to do whatever we can to reduce exposures to harmful chemicals

% of general population

	Strongly disagree		Somewhat disagree		Neither disagree nor agree		Somewhat agree		Strongly agree	
All countries	2.3	2.2	6.3	3.2	23.9	12.1	41.9	32.2	25.8	50.3
OECD average	2.2	2	6.2	3.2	24.2	12.4	42.4	32.8	25.1	50
Age Group										
18-29	3.5	2.9	9.3	4.6	28	17.6	37.1	34	22	40.9
30-44	2.4	2.3	6.4	3.7	24	12.6	41.1	33.2	26.2	48.3
45-59	1.8	2	5.4	2.5	22.6	10.5	43.8	31.3	26.4	53.5
60+	1.4	1.4	4.1	1.8	21.1	7.7	45.1	30.5	28.3	58.6
Gender										
Female	2	1.8	5.7	2.5	23.4	11.2	42.3	32.8	26.6	51.9
Male	2.5	2.7	6.9	3.9	24.3	13	41.6	31.8	24.9	48.7
Education level										
Lower/ medium	2.6	2.6	6.1	3.3	25.1	13	39.9	31.1	26.3	50.1
Higher	1.8	1.5	6.5	3	21.8	10.6	44..9	34.1	25	50.8

Note: Results highlighted in blue report the responses to the statement "I try to reduce exposure to harmful chemicals and chemical products in my daily life" and results highlighted in orange report responses to the statement "We have an obligation to future generations to do whatever we can to reduce exposures to harmful chemicals".

As before, the results for couples planning to have a child resemble those of the general population very strongly: 80.9% of respondents agree that there is an obligation to future generations to reduce exposure, with agreement increasing with increasing age as well as being slightly higher for women (83%) than for men (78.6%) as well as for people at higher education level (83.4%) compared to lower/medium level (79.3%).

The role of government

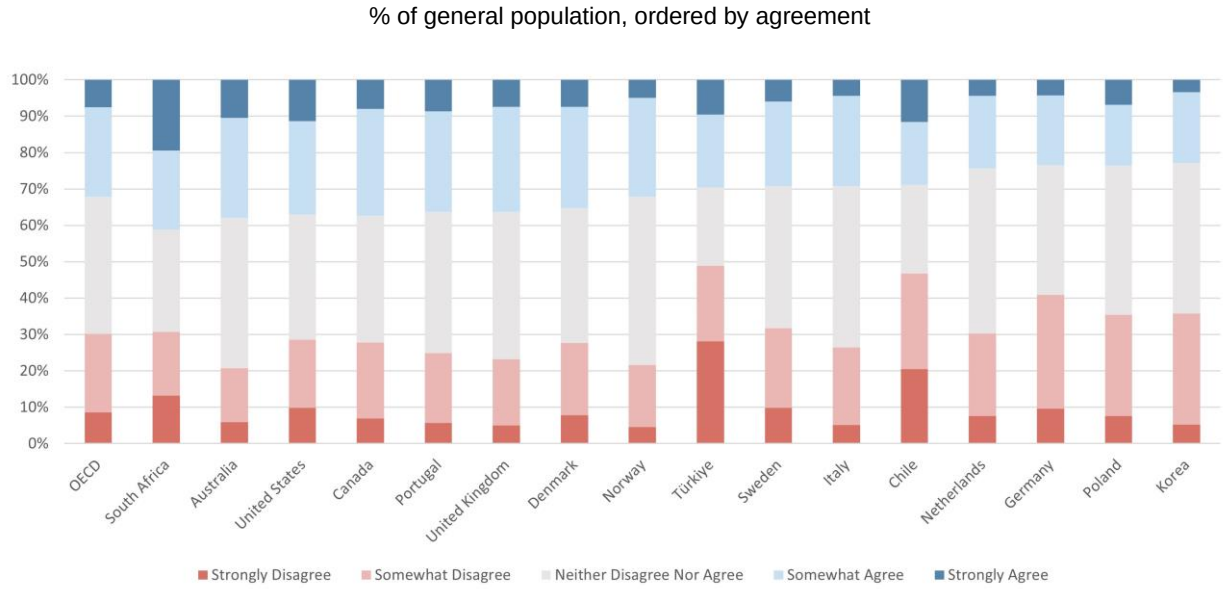
In order to discern respondents' attitudes towards chemical regulation in place, they were presented with three statements for agreement or disagreement:

1. The use of harmful chemicals is sufficiently regulated in my country,
2. Governments should take stronger action to reduce the presence of harmful substances in products of daily use,
3. Governments should take stronger action to reduce emissions to the environment of harmful substances.

A considerable proportion of respondents express uncertainty, saying they neither agree nor disagree with the statement that the use of harmful chemicals is sufficiently regulated in their country. Uncertainty appears to be particularly high in Norway (46.2%), the Netherlands (45.3%) and Italy (44.4%). Opinion on the sufficient stringency of national chemicals regulation varies considerably among countries, with agreement ranging from only 22.9% in Korea and 23.6% in Poland to 37.4% in Canada, 37.9% in Australia

and 41.2% in South Africa. Disagreement is strongest in Turkey (48.9%), Chile (46.8%) and Germany (40.9%) (see **Figure 3.7**).

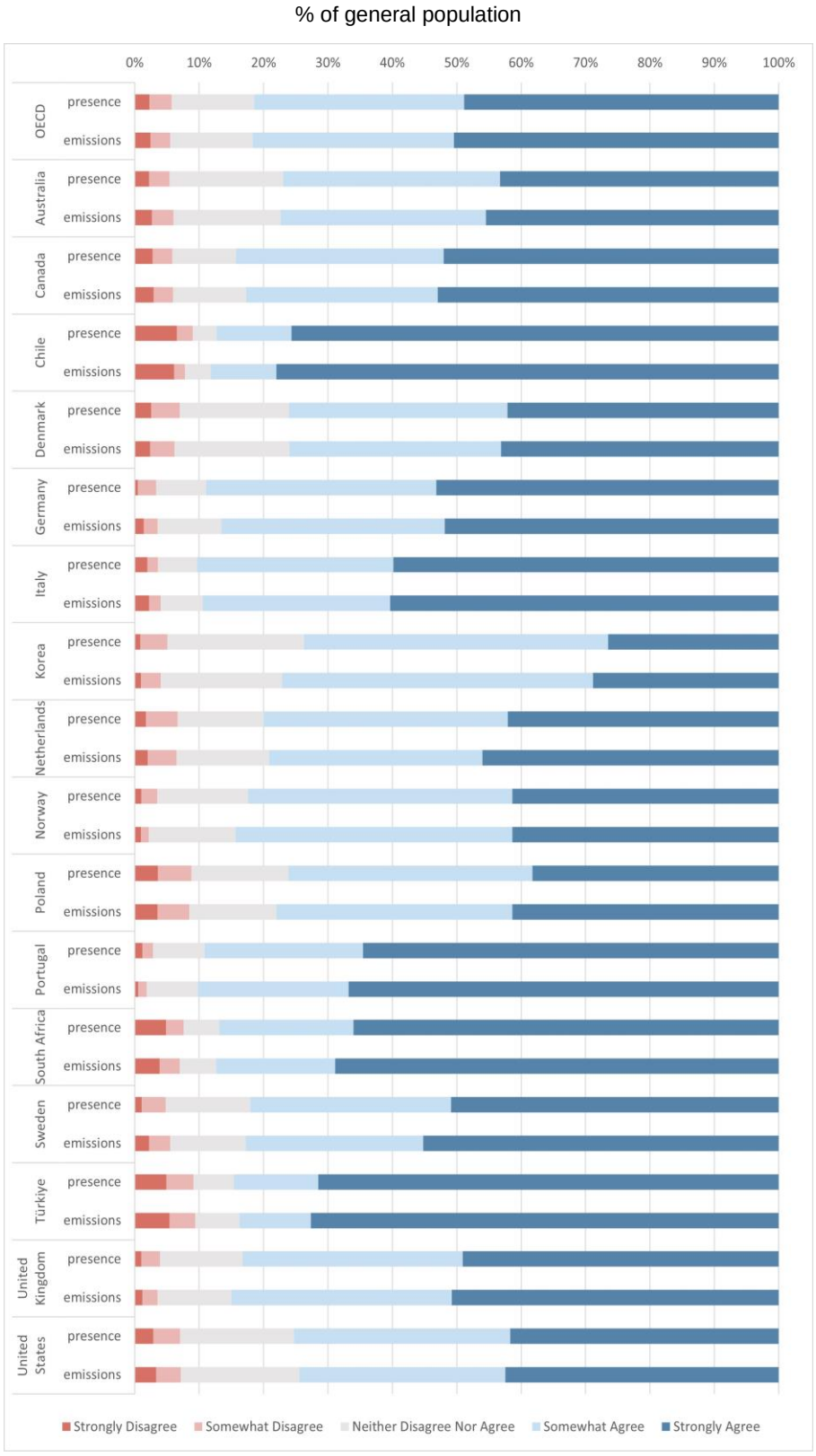
Figure 3.7. The use of harmful chemicals is sufficiently regulated in my country



When looking at different socio-demographic groups, opinions vary most strongly across different age groups: 36.5% of respondents between the ages of 18-29 consider chemicals sufficiently regulated in their country, compared to only 26.6% of respondents over the age of 60, with agreement decreasing as the respondents' ages increase (see **Figure A B.1** in Annex B). The same can be observed for heterosexual couples planning to have child within the next 5 years where a third of respondents (33.1%) express uncertainty about national regulation and where confidence in chemical regulation decreases with age (only 8.9% of respondents aged 45-65 agree strongly compared to 13.7% for those aged 18-24).

In contrast, respondents across countries and sociodemographic groups strongly agree that governments should take stronger action to reduce the presence of harmful substances in products of daily use as well as to reduce emissions of harmful substances to the environment. On average, 82% of respondents support stronger government action with the strongest support coming from Italy, Portugal, Chile and Germany. There is no significant difference between respondents' wish for more regulation of the presence of harmful substances in everyday products as compared to action to reduce emissions of harmful substances, as shows **Figure 3.8**. This strong opinion is in favour of more stringent chemicals regulation even when respondents seem to be uncertain if the use of chemicals are sufficiently regulated or not. One interpretation could be that people on average tend to favour a precautionary approach to regulating chemicals even if they don't know if enough regulation is already in place.

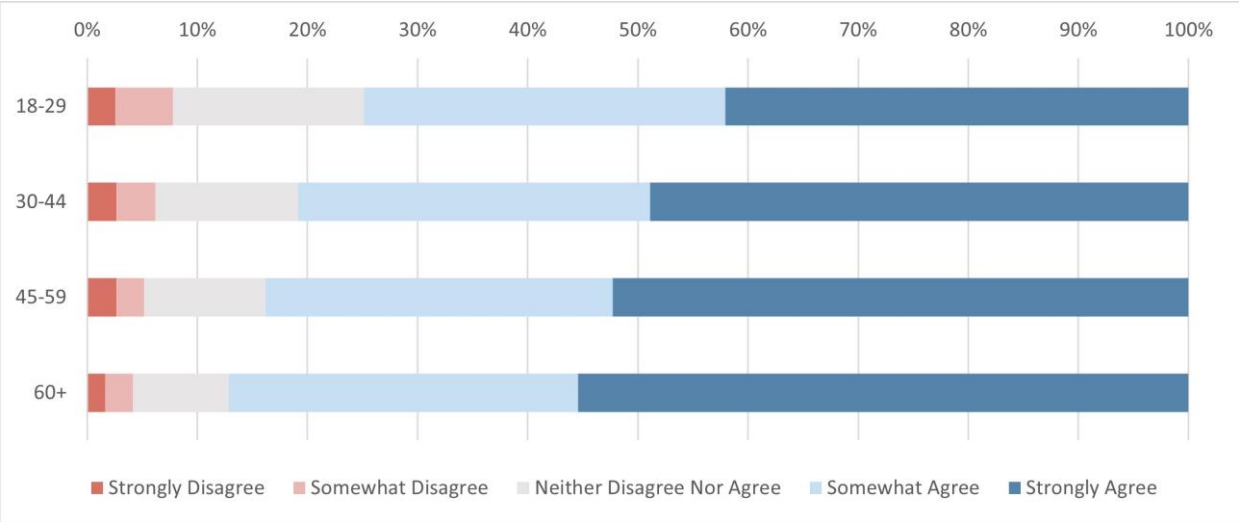
Figure 3.8. Governments should take stronger action to reduce the presence of harmful substances in products of daily use / to reduce emissions to the environment of harmful substances



In line with the observed lower confidence in government regulation of older age groups, the age group of 60+ is also the most likely to agree that government should take stronger action to reduce the presence and emission of harmful substances (see **Figure 3.9** and **Table A B.1**). This can also be observed for heterosexual couples planning to have child within the next 5 years where 85% of respondents aged 45-65 agreed compared to 78.9% of those between 18-24.

Figure 3.9. Governments should take stronger action to reduce the presence of harmful substances in products of daily use

By age group, % of general population



The role of business and industry

Lastly, respondents were asked about the role of business and industry:

1. Business and industry should take stronger action to reduce the presence of harmful substances in products of daily use.
2. Business and industry should take stronger action to reduce emissions to the environment of harmful substances.

Respondents across countries overwhelmingly agree that business and industry should take stronger action both to reduce the presence of harmful substances in products of daily use as well as their emission to the environment: 83.6% of respondents either agree somewhat or strongly with the statements. This is highly similar to the proportion of respondents who agree that the government should take stronger action though the proportion of respondents who strongly agree is slightly larger for the role of business and industry (51.4% and 52.8%) than for the role of the government (48.9% and 50.5%).

The wish for stronger action by industry and business is particularly pronounced in Portugal, Germany and Italy. Again, there are only minor differences between respondents' attitudes towards industry action to reduce the presence of harmful chemicals in products compared to action to reduce emissions of harmful substances (see **Figure 3.10**).

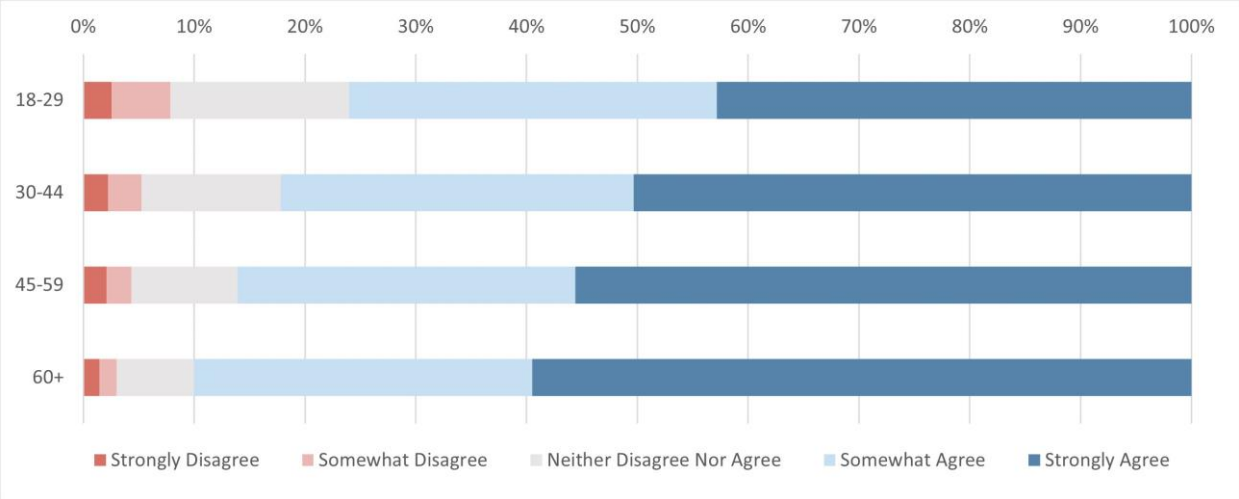
Figure 3.10. Business and industry should take stronger action to reduce the presence of harmful substances in products of daily use / to reduce emissions to the environment of harmful substances

% of general population

As for the role of governments, respondents' higher age correlates with increased desire for stronger action by business and industry (see **Figure 3.11**), and a slightly higher proportion of respondents with a higher education level (86.2%) agree than did those at lower or medium level (82%) (see **Table A B.1**).

Figure 3.11. Business and industry should take stronger action to reduce the presence of harmful substances in products of daily use

By age group, % of general population



4 Conclusions

The results of the questions on attitudes towards chemicals in the SWACHE surveys show that the public is generally aware of the hazards of chemicals and how they can be exposed, are taking action in their everyday lives to reduce exposure and overwhelmingly support stronger action by governments and business and industry to reduce the presence and emission of harmful substances.

Almost three out of four respondents said they were aware of the health risks associated with chemicals and while there is some variation among countries, at least 50% of respondents across all countries confirmed their awareness. Likewise, the majority of respondents (62%) said that they were aware of the ways in which they can be exposed to harmful chemicals although there appeared to be increased uncertainty about the ways they are exposed as inferred from the higher proportion of respondents neither agreeing nor disagreeing with the statement.

Respondents consider themselves to be more frequently exposed to products and product packaging containing harmful substances outside their home compared to inside, and awareness of exposure was higher among younger people.

More than two thirds of respondents claimed to take daily action to reduce their exposure to harmful substances with action being taken more frequently with increasing age. Similarly, the older the respondents, the more likely they were to say they had an obligation to future generations to reduce their exposure, with an average of over 80% agreeing across all ages.

Respondents expressed a moderate amount of uncertainty regarding whether harmful substances were sufficiently regulated in their country and there was considerable variation among countries in confidence in the sufficiency of their country's regulation. There was, however, overwhelming support for stronger government action to reduce the presence of harmful chemicals in products of daily use as well as their emission to the environment (82%). Support for stronger action taken by business and industry was even stronger (84%) and as for government action increased with age.

A summary of the OECD average responses to all questions are in **Figure 4.1** and **Figure 4.2**.

These findings confirm previous survey and poll results that found that the public supports additional and stricter regulation of chemicals and demonstrates that this is also the case beyond the European Union. Moreover, the findings accord an even stronger responsibility to business and industry players to reduce the exposure to harmful substances.

Figure 4.1. Attitudes towards chemicals and chemicals regulation, OECD average

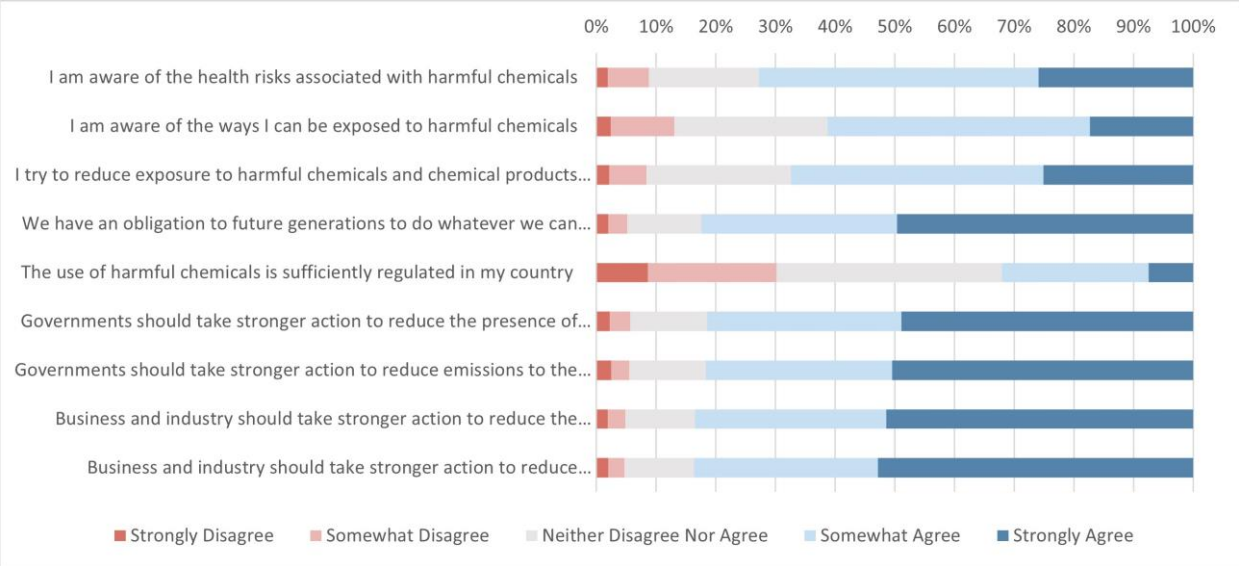
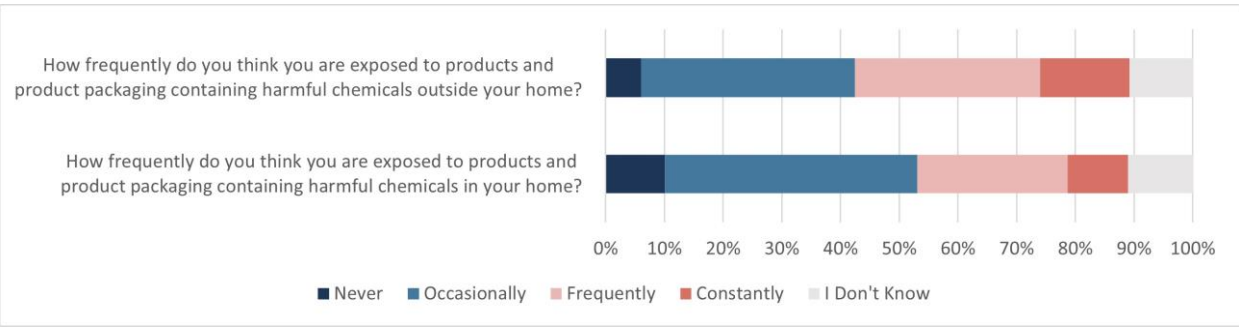


Figure 4.2. Perception of exposure to chemicals inside and outside homes, OECD average



References

Appéré, G. et al. (2023), "Valuing a reduction in the risk and severity of asthma: A large scale multi-country stated preference approach", *OECD Environment Working Papers*, No. 218, OECD Publishing, Paris, https://doi.org/10.1787/f289d29e-en. [1]

Dockins, C. et al. (2023), "Valuing a reduction in the risk of chronic kidney disease: A large scale multi-country stated preference approach", *OECD Environment Working Papers*, No. 216, OECD Publishing, Paris, https://doi.org/10.1787/9c93138f-en. [2]

Dussaux, D. et al. (2023), "Valuing a reduction in the risk of infertility: A large scale multi-country stated preference approach", *OECD Environment Working Papers*, No. 215, OECD Publishing, Paris, https://doi.org/10.1787/7242509f-en. [3]

EC DG COMM (2020), *Special Eurobarometer 501. Attitudes of European citizens towards the environment.*, European Union, https://doi.org/10.2779/902489. [14]

EC DG COMM (2017), *Special Eurobarometer 456. Chemical Safety*, European Union. [16]

Entine, J. (2011), *Scared to Death. How Chemophobia Threatens Public Health.*, American Council on Science and Health. [7]

Francl, M. (2013), "How to counteract chemophobia", *Nature Chemistry*, Vol. 5/6, pp. 439-440, https://doi.org/10.1038/nchem.1661. [8]

Lee, T. (1986), "Public attitudes towards chemical hazards", *Science of The Total Environment*, Vol. 51, pp. 125-147, https://doi.org/10.1016/0048-9697(86)90296-2. [12]

Matisāne, L. et al. (2022), "Citizens' Perception and Concerns on Chemical Exposures and Human Biomonitoring—Results from a Harmonized Qualitative Study in Seven European Countries", *International Journal of Environmental Research and Public Health*, Vol. 19/11, p. 6414, https://doi.org/10.3390/ijerph19116414. [11]

Mourato, S. et al. (2023), "Valuing the avoidance of IQ losses in children: A large scale multi-country stated preference approach", *OECD Environment Working Papers*, No. 219, OECD Publishing, Paris, https://doi.org/10.1787/71574eb4-en. [5]

Program on Reproductive Health and the Environment (2022), *Public Opinion on Chemicals*, https://prhe.ucsf.edu/public-opinion-chemicals. [15]

Rulev, A. (2021), "Chemical Education contra Chemophobia", *CHIMIA*, Vol. 75/1-2, p. 98, https://doi.org/10.2533/chimia.2021.98. [9]

Ščasný, M., I. Zvěřinová and D. Dussaux (2023), "Valuing a reduction in the risk of very low birth weight: A large scale multi-country stated preference approach", *OECD Environment Working Papers*, No. 217, OECD Publishing, Paris, https://doi.org/10.1787/dfd159a1-en. [4]

Schummer, J., B. Bensaude-Vincent and B. Van Tiggelen (2007), *The Public Image of Chemistry*, WORLD SCIENTIFIC, https://doi.org/10.1142/6636. [6]

TNS BRMB (2015), *Public attitudes to chemistry. Research Report.*. [10]

Uhl, M. et al. (2021), "Chemical Exposure: European Citizens' Perspectives, Trust, and Concerns on Human Biomonitoring Initiatives, Information Needs, and Scientific Results", *International Journal of Environmental Research and Public Health*, Vol. 18/4, p. 1532, https://doi.org/10.3390/ijerph18041532. [13]

Annex A. Questionnaire

I am aware of the health risks associated with harmful chemicals	
Strongly disagree	1
Somewhat disagree	2
Neither agree nor disagree	3
Somewhat agree	4
Strongly agree	5
I am aware of the ways I can be exposed to harmful chemicals	
Strongly disagree	1
Somewhat disagree	2
Neither agree nor disagree	3
Somewhat agree	4
Strongly agree	5
How frequently do you think you are exposed to products and product packaging containing harmful chemicals in your home?	
Never	1
Occasionally	2
Frequently	3
Constantly	4
I Don't Know	9999
How frequently do you think you are exposed to products and product packaging containing harmful chemicals outside your home?	
Never	1
Occasionally	2
Frequently	3
Constantly	4
I Don't Know	9999
I try to reduce exposure to harmful chemicals and chemical products in my daily life	
Strongly disagree	1
Somewhat disagree	2
Neither agree nor disagree	3
Somewhat agree	4
Strongly agree	5

We have an obligation to future generations to do whatever we can to reduce exposures to harmful chemicals	
Strongly disagree	1
Somewhat disagree	2
Neither agree nor disagree	3
Somewhat agree	4
Strongly agree	5
The use of harmful chemicals is sufficiently regulated in my country	
Strongly disagree	1
Somewhat disagree	2
Neither agree nor disagree	3
Somewhat agree	4
Strongly agree	5
Governments should take stronger action to reduce the presence of harmful substances in products of daily use	
Strongly disagree	1
Somewhat disagree	2
Neither agree nor disagree	3
Somewhat agree	4
Strongly agree	5
Governments should take stronger action to reduce emissions to the environment of harmful substances	
Strongly disagree	1
Somewhat disagree	2
Neither agree nor disagree	3
Somewhat agree	4
Strongly agree	5
Business and industry should take stronger action to reduce the presence of harmful substances in products of daily use	
Strongly disagree	1
Somewhat disagree	2
Neither agree nor disagree	3
Somewhat agree	4
Strongly agree	5
Business and industry should take stronger action to reduce emissions to the environment of harmful substances	
Strongly disagree	1
Somewhat disagree	2
Neither agree nor disagree	3
Somewhat agree	4
Strongly agree	5

Annex B. Additional Figures

Awareness of health risks and ways of exposure

Figure A B.1. I am aware of the ways I can be exposed to harmful chemicals

% of general population

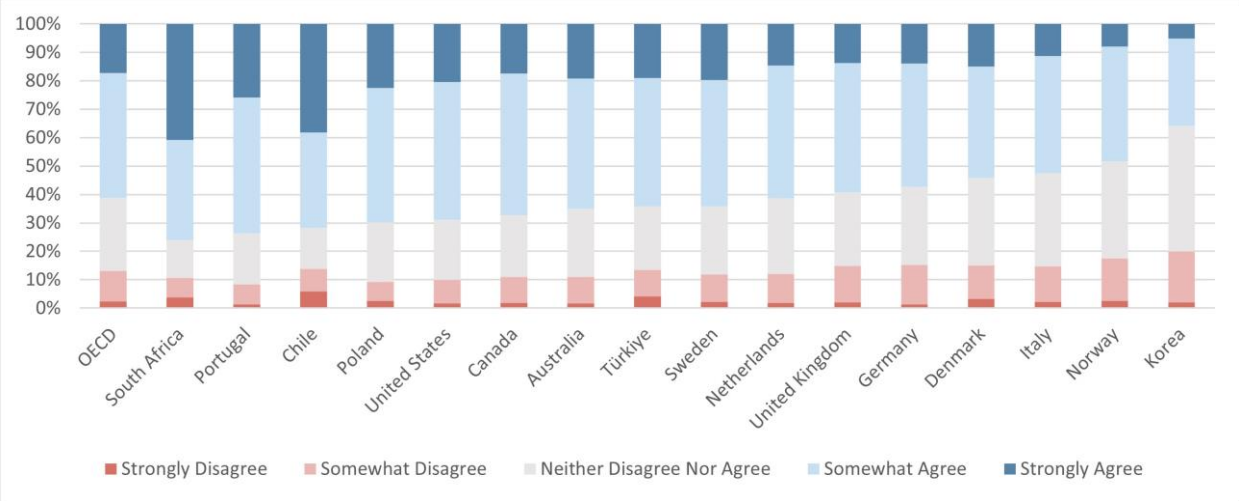
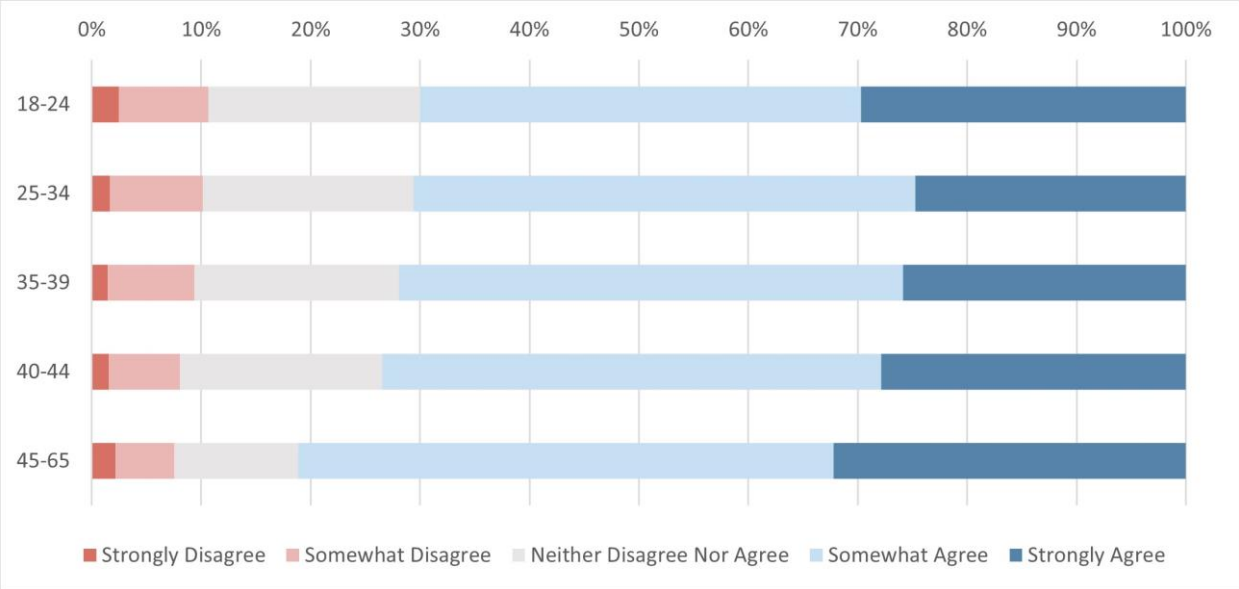


Figure A B.2. I am aware of the health risks associated with harmful chemicals

By age group, % of heterosexual couples planning to have child within the next 5 years



Perceived exposure to harmful substances

Figure A B.3. How frequently do you think you are exposed to products and product packaging containing harmful chemicals in your home?

% of general population

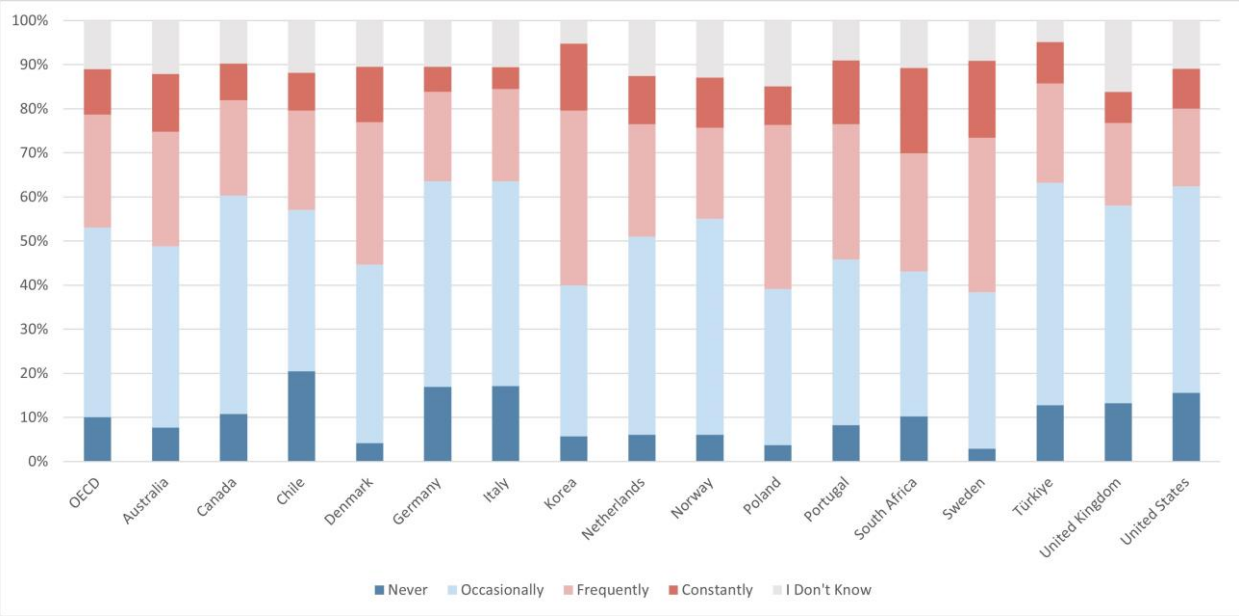


Figure A B.4. How frequently do you think you are exposed to products and product packaging containing harmful chemicals outside your home?

% of general population

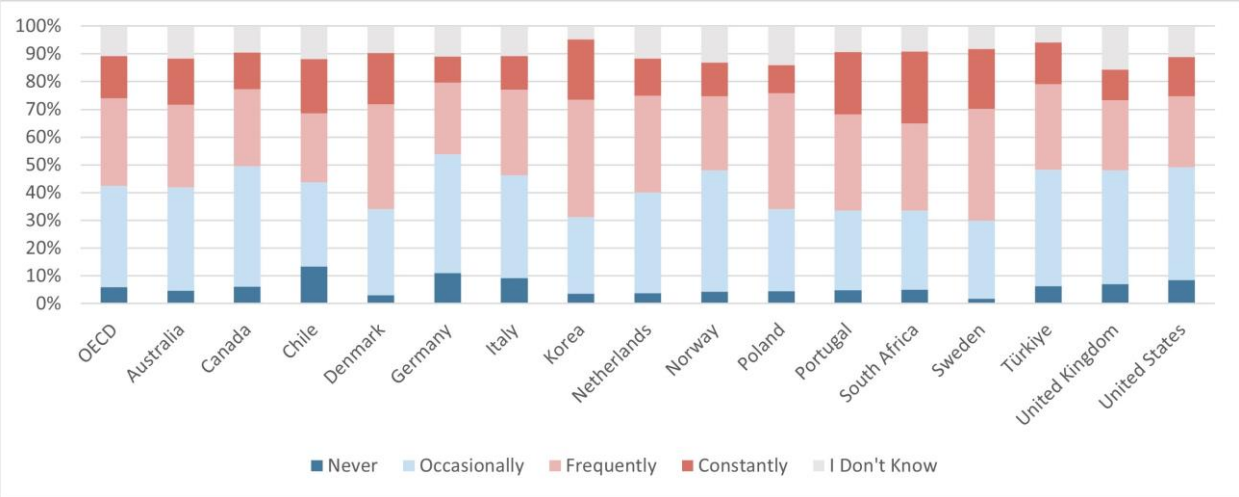


Figure A B.5. How frequently do you think you are exposed to products and product packaging containing harmful chemicals in your home?

% of heterosexual couples planning to have child within the next 5 years

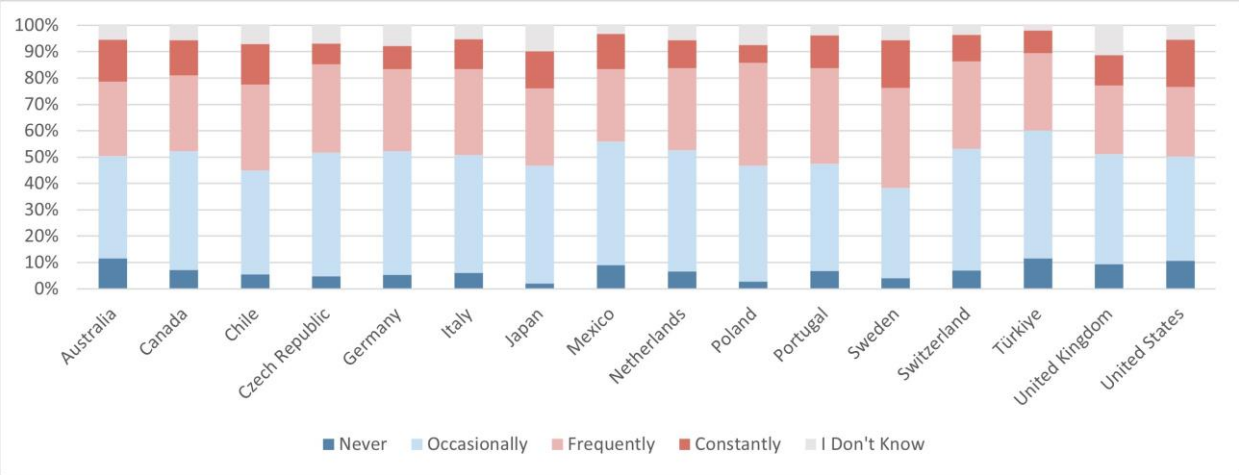


Figure A B.6. How frequently do you think you are exposed to products and product packaging containing harmful chemicals outside your home?

% of heterosexual couples planning to have child within the next 5 years

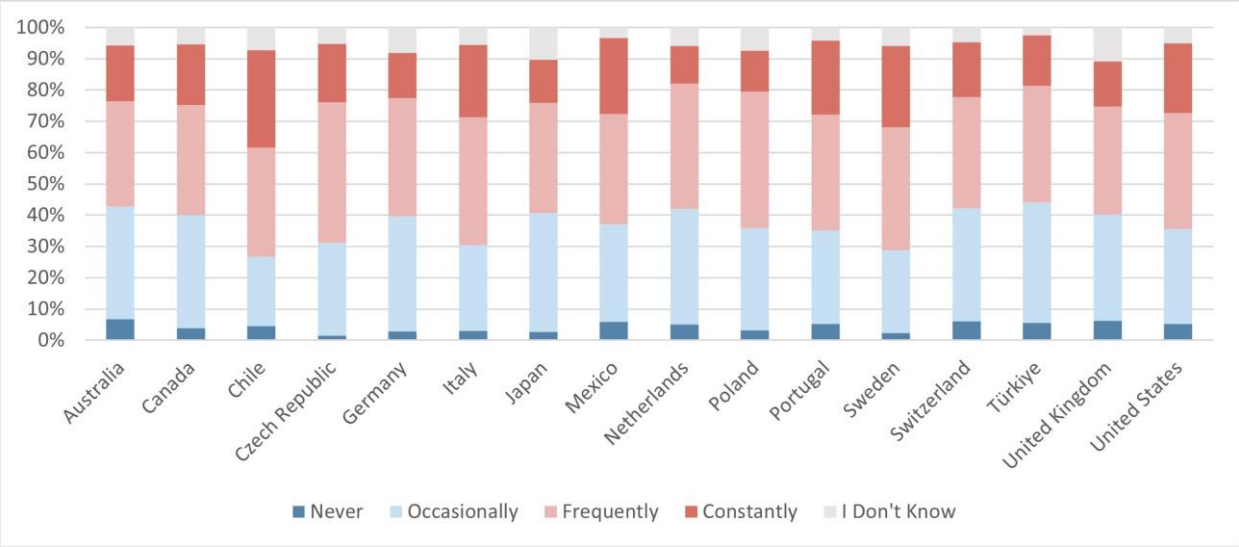


Table A B.1. How frequently do you think you are exposed to products and product packaging containing harmful chemicals inside / outside your home?

% of heterosexual couples planning to have child within the next 5 years

	Never		Occasionally		Frequently		Constantly		I Don't Know	
All countries	7	4.4	43	32.6	30.9	37.4	12.7	19.2	6.4	6.4
Age Group										
18-24	10.2	6	41.3	29.6	30.1	35.9	12.9	23.1	5.5	5.4
25-34	6.6	4.3	43.2	32.4	31.1	37.5	12.7	19.4	6.5	6.5
35-39	7.7	4.7	42.7	32.9	29.1	37.7	12.4	18.2	6.2	6.5
40-44	6.1	3.5	44.5	34.5	32.2	37.1	13.3	18	7	6.9
45-65	7.2	4.5	42.6	37.1	30.7	34.6	12.6	15.8	5.4	5.1
Gender										
Female	6.4	4.2	42.4	30.6	31.1	37.3	12.4	20.2	7.7	7.7
Male	7.7	4.7	43.6	34.6	30.7	37.5	12.9	18.2	5.1	5.1
Education level										
Lower/ medium	7.2	4.7	43.3	32.1	31.3	37.5	11.6	19.1	6.5	6.5
Higher	6.7	4	42.5	33.3	30.3	37.2	14.4	19.4	6.2	6.2

Note: Results highlighted in blue report responses to the question "How frequently do you think you are exposed to products and product packaging containing harmful chemicals inside the home?" and results highlighted in orange report responses to the question "How frequently do you think you are exposed to harmful chemicals outside your home?".

The role of government

Figure A B.1. The use of harmful chemicals is sufficiently regulated in my country

% of general population, by age group

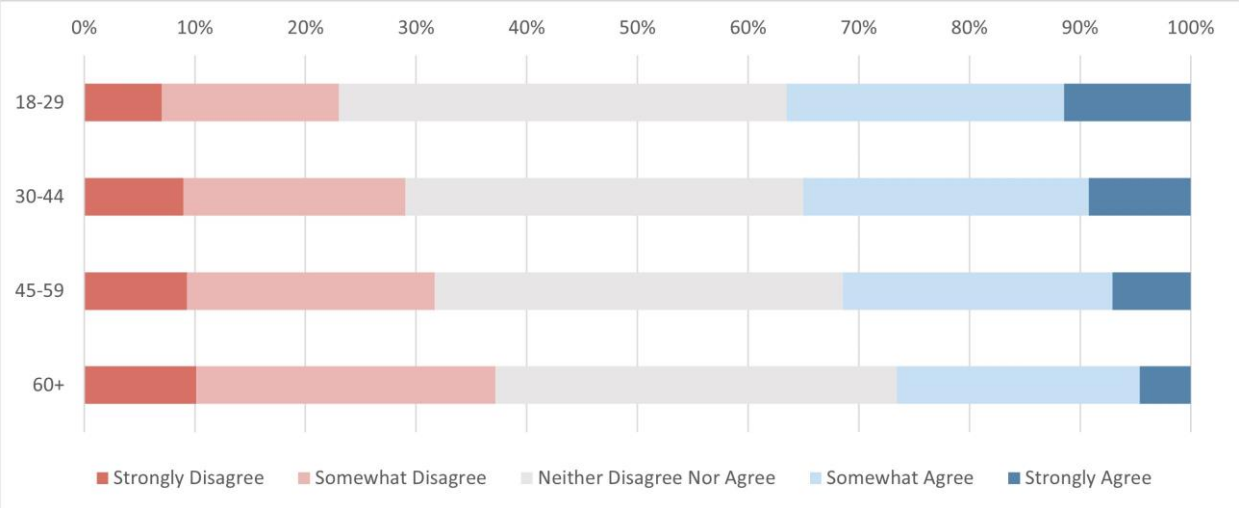


Table A B.1. Governments should take stronger action to reduce the presence of harmful substances in products of daily use / to reduce emissions to the environment of harmful substances

% of general population

	Strongly disagree		Somewhat disagree		Neither disagree nor agree		Somewhat agree		Strongly agree	
All countries	2.4	2.5	3.4	3	12.4	12.8	32	30.5	49.8	51.4
OECD average	2.3	2.5	3.5	3	12.8	12.5	32.6	31.2	48.9	50.5
Age Group										
18-29	2.5	3.1	5.3	4.5	17.3	17	32.8	30.9	42	44.6
30-44	2.7	2.6	3.5	3.3	12.9	13	32	31.1	48.9	50.1
45-59	2.7	2.7	2.6	2.1	11	11.3	31.5	30.5	52.3	53.3
60+	1.7	1.8	2.5	2.4	8.7	8.6	31.7	29.4	55.4	57.8
Gender										
Female	2	2.1	2.8	2.7	11.7	11.6	32.3	30.8	51.2	52.8
Male	2.9	3	4.1	3.4	13.1	13.3	31.7	30.3	48.3	50
Education level										
Lower/ medium	2.8	2.8	3.6	3.2	13	13.4	30.6	29.2	49.9	51.3
Higher	1.8	2.1	3.1	2.7	11.4	11	34.2	32.6	49.5	51.6

Note: Results highlighted in blue report responses to the statement “Governments should take stronger action to reduce the presence of harmful substances in products of daily use” and results highlighted in orange report responses to the statement “Governments should take stronger action to reduce the emissions to the environment of harmful substances”.

The role of business and industry

Table A B.1. Business and industry should take stronger action to reduce the presence of harmful substances in products of daily use / to reduce emissions to the environment of harmful substances

% of general population

	Strongly disagree		Somewhat disagree		Neither disagree nor agree		Somewhat agree		Strongly agree	
All countries	2.1	2.2	3	2.8	11.3	11.3	31.5	30.2	52.1	53.6
OECD average	1.9	2	3	2.8	11.6	11.6	32	30.9	51.4	52.8
Age Group										
18-29	2.6	2.7	5.3	4.6	16.1	16.4	33.2	30.7	42.8	45.6
30-44	2.2	2.3	3	3.1	12.5	12.4	31.9	30.5	50.4	51.7
45-59	2.1	2.2	2.3	2.1	9.6	9.5	30.5	30	55.6	56.3
60+	1.5	1.4	1.6	1.5	6.9	6.8	30.6	29.6	59.5	60.7
Gender										
Female	1.8	1.9	2.7	2.3	10.7	10.6	31.6	30.6	53.3	54.7
Male	2.5	2.5	3.3	3.4	11.9	11.9	31.5	30	50.9	52.3
Education level										
Lower/ medium	2.5	2.6	3.2	2.9	12.3	12.4	30	28.9	51.9	53.2
Higher	1.5	1.5	2.7	2.6	9.6	9.6	33.8	32.2	52.5	54.2

Note: Results highlighted in blue report responses to the statement “Business and industry should take stronger action to reduce the presence of harmful substances in products of daily use” and results highlighted in orange report responses to the statement “Business and industry should take stronger action to reduce emissions to the environment of harmful substances”.

In the context of a series of surveys conducted as part of the OECD's "Surveys on Willingness-to-Pay to Avoid Negative Chemicals-Related Health Impacts" (SWACHE) project that supports the socio-economic analysis of chemicals, a series of questions were included about the respondents' attitudes towards their exposure to harmful chemicals and the need for action by governments and industry to reduce exposure to harmful substances.

Responses to the attitudinal questions show that the public is generally aware of the hazards of chemicals and how they can be exposed and are taking action in their everyday lives to reduce exposure. Respondents expressed a moderate amount of uncertainty whether harmful substances were sufficiently regulated in their country and there was considerable variation among countries in confidence of their country's regulation. There was, however, overwhelming support for stronger government and business and industry action to reduce the presence of harmful chemicals in products of daily use as well as their emission to the environment.

www.oecd.org/chemicalsafety/risk-management