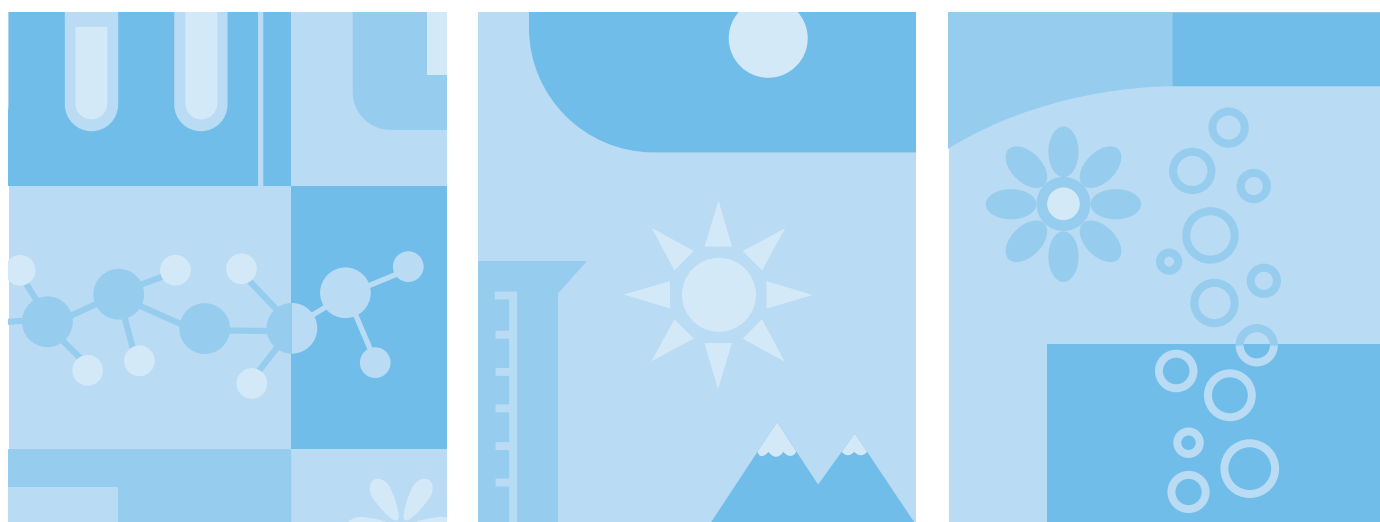


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# Biocide treated articles

– assessing knowledge levels





# **Biocide treated articles**

## **– assessing knowledge levels**

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Order address: CM Gruppen, P.O. Box 11063, SE-161 11 Bromma, Sweden

Phone: +46 8 5059 33 35, Fax +46 8-5059 33 99, E-mail: kemi@cm.se

The report is available as a downloadable pdf on [www.kemi.se](http://www.kemi.se)

## **Preface**

The Swedish Chemicals Agency (KemI) has been assigned by the Swedish Government to launch an Action plan 2011 – 2014 for a toxic-free everyday environment. Reducing chemical risks in the everyday environment is one step towards achieving the environment quality objective A Non-Toxic Environment, established by the Swedish Parliament and operated by KemI.

Within the framework of the action plan, a project concerning biocide treated articles is led by Lolo Heijkenskjöld at KemI's unit for Biocidal Products and GMO. For this project, a base line study was carried out during spring and summer of 2012. The study was undertaken to describe the current level of biocide knowledge in companies that import consumer articles, as well as the general understanding of biocides among companies, municipalities and consumers. The investigation was performed by Helena Strehlenert, Jenny Westerdahl, Hanna Ljungkvist and Eliana Alvarez at the IVL Swedish Environmental Research Institute. The results of the study are presented in this report.



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## Summary

This study was commissioned to the IVL Swedish Environmental Research Institute by the Swedish Chemicals Agency, with the task to assess the level of knowledge regarding biocides in consumer products within three stakeholder groups; importing companies, municipalities and consumers.

The knowledge among importing companies was studied by conducting interviews with representatives from importers of five different product categories that were selected based on criteria such as exposure and import volume. One representative from a municipal water and wastewater association was also interviewed. These interviews resulted in more qualitative information regarding perceptions and knowledge about biocide treated products. To describe the level of knowledge among municipalities, electronic questionnaires were sent to the environment and consumer advice offices. A good response frequency made it possible to derive more quantitative and representative data from this part of the study. Representatives from two major consumer organisations responded to a similar questionnaire.

The results show variable knowledge among companies. Twelve out of thirty interviewed companies reported that they do not import biocide treated products, and most of them stated that this was an informed decision. These respondents also rated their knowledge level as sufficient to a greater extent than respondents from companies who did import such products. Eight respondents did not know whether their company imported treated products or not and reported that they had insufficient knowledge about the topic. More support and clarity regarding applicable regulations on the issue was requested by many companies. The exchange of information about biocide treatment appeared to be limited in the supply chain, in some cases due to lack of knowledge among suppliers.

In municipalities, the environment respondents were in general aware about biocides in consumer products and the associated risks. The consumer advisers were less familiar with the issue. Both groups thought that biocide treated consumer products were not considered a major problem by the general public and saw that little activity and effort was directed to this issue in their municipalities.

The respondents from the Swedish Water and Wastewater Association, the Swedish Society for Nature Conservation and the Swedish Consumers' Association were well informed and aware of issues and risks connected to biocide treated consumer products. The respondents from these organisations also said that they received concerned questions from the public and that they work to inform and educate consumers about the topic.



# Sammanfattning

Studien genomfördes av IVL Svenska Miljöinstitutet på uppdrag av Kemikalieinspektionen för att undersöka kunskapsläget kring biocider i konsumentprodukter hos tre grupper av intressenter; importföretag, kommuner och konsumenter.

Kunskapsläget hos importföretagen studerades med hjälp av intervjuer med representanter från importörer av fem olika produktkategorier, utvalda enligt antal kriterier som exponering och importvolym. En representant från branschorganisationen för svenska vattentjänstföretag intervjuades också. Dessa intervjuer gav mer kvalitativ information om de tillfrågades uppfattningar och kunskapsnivå. För att beskriva kunskapsläget hos kommuner skickades elektroniska enkäter till miljökontor och konsumentvägledare. En god svarsfrekvens ledde till mer kvantitativa och representativa data i denna del av studien. Representanter från två stora konsumentorganisationer besvarade en liknande enkät.

Studien visade att kunskapsläget varierar bland importföretagen. Tolv av trettio tillfrågade företag angav att de inte importerar biocidbehandlade varor och de flesta av dem sade att detta var ett medvetet beslut. De uppskattade också sin kunskapsnivå som tillräcklig i större utsträckning än de som svarade för företag som importerade biocidbehandlade produkter. Åtta av de trettio tillfrågade visste inte om företaget importerade behandlade produkter eller ej och sade sig dessutom ha otillräcklig kunskap i ämnet. Många företag efterfrågade ytterligare stöd och tydlig information om tillämpliga regler. Informationsutbytet kring biocidbehandling av varor i leverantörskedjan sågs som begränsat, i viss utsträckning beroende på kunskapsbrist hos leverantörsföretagen.

Miljökontorens representanter i de svarande kommunerna var i allmänhet medvetna om de risker som förknippas med biocider i konsumentprodukter. För de kommunala konsumentvägledarna var det ett mindre bekant område. Båda grupperna trodde att allmänheten inte uppfattade biocidbehandlingen som något större problem och ansåg att små eller inga resurser lades på att informera och agera i frågan.

Representanterna från de tillfrågade organisationerna Svenskt Vatten, Svenska Naturskyddsföreningen och Sveriges Konsumenter hade god kunskap om biocidbehandlade produkter och om de risker som förknippas med detta. Organisationerna uppgavs få frågor från konsumenter och arbeta med att sprida information för att upplysa allmänheten om problemområdet.



# 1 Introduction

Biocides are used to prevent harmful animals, plants or microorganisms from causing detrimental effects on humans, products, animals or the environment. The active substances in biocides are designed to control different organisms. Due to the intrinsic properties of these substances and to the associated use, risks to humans, animals and the environment may arise. Additional concerns about the potential development of bacterial resistance to biocides such as disinfectants and preservatives are frequently raised. Biocides should therefore be used with caution.

Everyday products are increasingly being treated with biocides. Manufacturers and importers need to be aware of the fact that new legislation is approaching. The new EU Biocidal Products Regulation will enter into force 1 September 2013, with certain transitional measures. In brief, articles that are treated with biocides may only be placed on the market if the active substances contained have been approved in accordance with biocide legislation. This will apply also to articles imported from outside the EU. If an article is claimed to have biocidal properties, e.g. antibacterial, it shall also be labelled with information about this claim and about the active substance(s) contained. Furthermore, the claimed biocidal property of the treatment will have to be substantiated. These new obligations will require considerable efforts from manufacturers and importers of articles that have been treated with biocides.

IVL Swedish Environmental Research Institute was commissioned by the Swedish Chemicals Agency to assess the level of knowledge about biocides in consumer articles. The study was undertaken to capture several stakeholders' views on biocide treated consumer products. The aim was to describe the knowledge in companies importing some product categories of specific consumer importance as well as the general understanding of the issue among companies, municipalities and consumers. Such an investigation can provide the basis for prioritising further work as well as initiate the necessary preparations.

## 2 Methods

It is a challenge to describe complex knowledge in a comprehensive way. In this study, in-depth and more general descriptions of knowledge regarding biocides were obtained by using mixed methods. Semi-structured interviews were conducted with informants representing importing companies and a trade association concerned with municipal water and wastewater activities. Additional data was collected by means of electronic questionnaires to all municipalities in Sweden, to one environment interest group and one consumer organisation. These parties were contacted in order to describe the general understanding of the issue more from a consumer perspective. Further details on the methods for data collection are outlined in sections 2.2 and 2.3 below.

### 2.1 Selection of product categories and importing companies

Interviews were to be conducted with importers of five different categories of consumer goods. The categories were selected in cooperation with the Swedish Chemicals Agency to include products that are known to contain biocides, that constitute a substantial net inflow through trade into Sweden and that may give rise to direct exposure to biocides when used. The product categories already prioritised by the Swedish Chemical Agency were also an important element in the selection. Chemical products, i.e. chemical substances and mixtures, were excluded, since information requirements regarding biocide content are already in place for this kind of product. Further details about the selected product categories are presented in Table 1 below.

*Table 1 Selected product categories and estimated inflow through trade (Statistics Sweden, 2012a).*

<b>Product category</b>	<b>Estimated net inflow (tonnes/year)</b>
Shoes	19 000
Sports clothing	17 000
Bedroom textiles (including bed linen, table cloths and towels)	13 000
Toys	17 000
Building material (including kitchen and bathroom interiors)	No matching class found

The net inflow of the product categories was calculated as import plus production minus export, using relevant classes from the trade statistics' combined nomenclature (Statistics Sweden, 2012a).

Companies importing the selected product categories were identified in the Business Register (Statistics Sweden, 2012b), using the NACE nomenclature, see Appendix A. Some NACE classes correspond well with the selected product categories, while others contain large

numbers of product categories that were not of interest for this study. For the well-defined classes, extracts from the Business Register covered 20 companies per NACE class and was limited to companies with import values above 10 MSEK. For the not so well defined classes, extracts covered 100 companies to increase the probability of obtaining information on relevant companies. For some product categories, the number of companies identified through the Business Register was too limited and for these, additional companies were identified based on information from the Swedish Chemicals Agency or from the internet.

A set of importing companies for each product category was selected to be contacted. The companies could belong to different types of business (producers, wholesale trade companies and specialised retailers) and represent both small and large importers as well as different market segments.

## **2.2 Data collection through interviews**

Telephone interviews were conducted with representatives from importing companies. The interview questions were developed in cooperation with the Swedish Chemicals Agency (see Appendix B). Apart from background information about the company, the questions covered six different aspects of the survey topic: (1) Biocides and biocide treatment of consumer articles, (2) Aim, need and efficiency of biocide treatment, (3) Risks associated with biocide treatment, (4) Alternatives to biocide treatment, (5) Information in the supply chain and (6) Laws and regulations. The interviews were adapted to whether or not the informant responded that they do import biocide treated articles. If a company did import articles containing biocidal substances, the informant was asked all of the questions in the interview guide. If a company did not import such goods, a shorter version of the interview was conducted, covering only topics (1), (5) and (6).

First, an introductory e-mail was sent to the selected companies. The e-mail contained information about the survey and that the IVL Swedish Environmental Research Institute would contact the company in order to conduct a telephone interview. The companies were contacted by phone and asked to select a representative (person with knowledge about product design and function and/or responsibility for products imported) to be interviewed. The companies were informed about the aim of the survey and that data would be handled confidentially. The respondent's answers were written down by the interviewer during the interview. After completion of the interview, the respondents were offered additional information on the Biocidal Products Regulation from the Swedish Chemicals Agency.

In total, 30 interviews (five to seven interviews for each product category) were conducted. Only two contacted companies explicitly declined to participate in the survey, due to lack of time. In the majority of cases the respondent was a purchasing manager or quality-/environment manager. Several companies (primarily shoe and toy companies) referred to contact persons at head offices or corporate group level offices abroad. Thus, the interview work was time consuming, since a completed interview on average required at least five telephone contacts. There was a difference in availability between the product categories, where sports clothing companies were generally more difficult to get in contact with. Again on average, the interviews lasted 30 minutes.

A similar interview was conducted with a representative from the Swedish Water and Wastewater Association. The interview questions were developed in cooperation with the Swedish Chemicals Agency (see Appendix C). This interview covered three different aspects of the survey topic: (1) Biocides and their occurrence in sewage treatment plants, (2) Efforts to reduce biocides in the waste water and (3) Laws and regulations.

## 2.3 Data collection through questionnaires

Electronic questionnaires were sent to offices for land use planning and/or environment as well as to offices for consumer advice in all municipalities in Sweden. E-mail addresses were provided by the Swedish Chemicals Agency and the Swedish Consumer Agency. The questions were developed in cooperation with the Swedish Chemicals Agency and comprised both open-ended and closed-ended questions (see Appendices D and E).

The set of questions in the two questionnaires were similar, except that only planning/environment offices were asked to rate their level of knowledge about biocides in products and only consumer advisers were asked whether they usually inform consumers about a number of topics related to biocides in products. The differences were justified by the different work responsibilities.

The municipal planning/environment offices are broadly responsible for local issues relating to health and environment, which may sometimes involve the direct use of biocides. Environment inspectors may for instance be involved in the management of biocide use for municipal water purification or in cases of pest control. Normally, the inspectors have some background in natural sciences. On the other hand, municipal consumer advisers are responsible for consumer information and guidance in all kinds of issues, e.g. customer complaints regarding consumer products or services. The work area is wide-ranging and very seldom relates to health or environment issues. Typically, consumer advisers are more experienced in economy, sociology or law. They were contacted in this study in order to provide more views from the consumer perspective.

An e-mail with a short presentation of the survey, the aim and a link to an electronic questionnaire was sent to all the e-mail addresses provided. A reminder was sent after 13 days and after another seven days, the questionnaire was closed and the data was compiled and analysed.

For the planning/environment offices, 138 out of the 257 distributed questionnaires were completed, thus the response rate was 54 percent. 121 municipalities are represented in the data set (in some municipalities more than one respondent completed the questionnaire). The majority of respondents were environmental administrators or environment/health inspectors and the rest had environmental management positions or equivalent. Less than one percent of the non-responses can (with certainty) be attributed to incorrect e-mail addresses (in most cases the e-mail was sent to a group address, rather than to individual administrators).

The consumer adviser questionnaire was sent to 267 e-mail addresses. 108 advisers completed the questionnaire, thus the response rate was 40 percent. 88 municipalities are represented in the data. Less than three percent of the non-responses can (with certainty) be attributed to incorrect e-mail addresses or to individual administrators being on parental or sick leave. Contact with respondents revealed that one probable reason for not answering the questionnaire was that the survey topic was unfamiliar.

In addition, a similar electronic questionnaire was sent to the Swedish Society for Nature Conservation and the Swedish Consumers' Association (see Appendix E). One representative from each organisation completed the questionnaire.

## 2.4 Analysis of data

The qualitative data was compiled and analysed according to basic principles of thematic content analysis (Weber, 1990), i.e. classified into content based categories, enabling the search for patterns regarding knowledge about biocides and the companies' views on these



issues. It is important to try to distinguish between what the informants actually perceive or think, their answers during the interview and how the answers are classified. Therefore, precautions were taken in the analysis so that the informants' statements were regarded as indicators of knowledge, experiences and values. Essentially this means that only when several statements are pointing in the same direction, there is an implication that the data can be used as a basis for conclusions. Basic descriptive statistics were used to compile and analyse the quantitative data.

## 3 Results

### 3.1 Importing companies

Five groups of consumer goods were included in the survey: shoes, sports clothing, bedroom textiles, toys and building material. Interviews were conducted with representatives from five to seven companies in each group. The interviews were adapted to whether or not the respondents stated that they do import biocide treated articles.

As shown in Table 2 below, ten out of the total 30 companies stated that they do import biocide treated products, hence they were asked the full set of questions. Twelve informants said that their company had chosen not to import biocide treated goods. Eight informants did not know whether articles in their product range are treated with biocides or not. These companies completed the shorter version of the interview.

*Table 2 Answers to the interview question “Do you import biocide treated products?” (Number of informants)*

<b>Product category</b>	<b>Yes</b>	<b>No</b>	<b>Do not know</b>	<b>Total</b>
Shoes	2	5	0	7
Sports clothing	2	1	2	5
Bedroom textiles	0	5	1	6
Toys	3	1	3	7
Building material	3	0	2	5
<b>Total</b>	<b>10</b>	<b>12</b>	<b>8</b>	<b>30</b>

The interviewed representatives were asked to rate their knowledge about biocides. The results are shown in Figure 1.

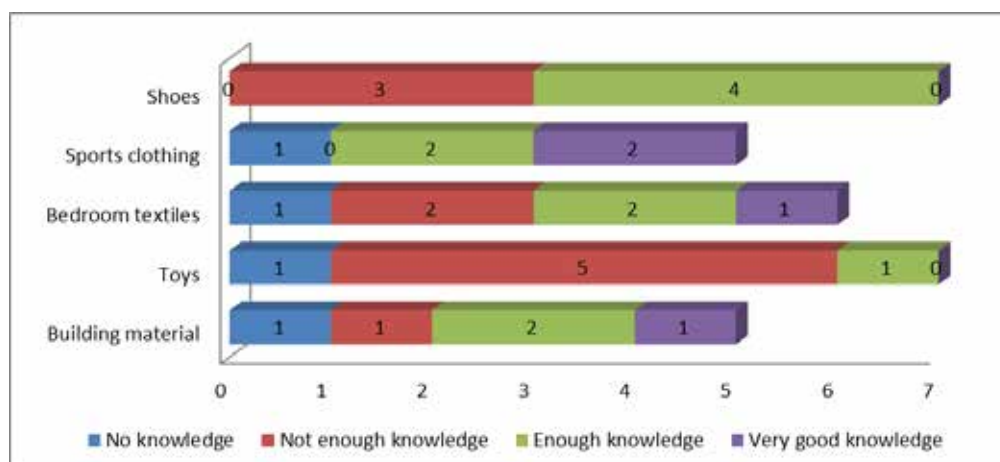


Figure 1 Answers to the interview question “What is your level of knowledge about biocides?” (Number of informants)

The combined answers from respondents regarding their company’s import of biocide treated products and their self-rated level of knowledge (aggregated into sufficient or not sufficient) are presented in Table 3 below.

Table 3 Combined answers regarding level of knowledge and import of biocide treated products: “Is your level of knowledge about biocides sufficient?”

Product category	Import	No import	Unsure of import
Shoes	No	Yes	Not available
Sports clothing	Yes	Yes	No
Bedroom textiles	Not available	Yes/No	No
Toys	No	Yes	No
Building material	Yes	Not available	No

As shown in the table above, the informants that did not know whether their company imports biocide treated products rated their knowledge about biocides as being insufficient. Companies that do not import biocide treated products generally reported having sufficient knowledge. Most of these respondents also reported the exclusion of treated products to be an informed decision. Such decisions were reported from all product categories, except building material.

Companies that do import products treated with biocidal substances gave mixed answers. Shoe and toy companies importing biocide treated articles reported not having enough knowledge about biocides, while the companies importing biocide treated sports clothing and building materials claimed to have sufficient knowledge. The majority of the bedroom textiles companies do not import biocide treated products, but their knowledge ratings were evenly distributed across the entire scale.

The new requirements for treated articles in the upcoming Biocidal Products Regulation were recognised by 12 of the 30 interviewed companies. The informants were also asked to rate their level of knowledge about chemicals in products in general. In this case, the results indicate that companies claim to have better knowledge than about biocides. Throughout the interviews, it was however apparent that informants mixed the topic of biocide treated articles with the more general topic of chemicals in products.

### **3.1.1. Shoes**

Representatives from seven companies importing shoes were interviewed. Two of the seven informants reported that their company imports biocide treated products or products that contain parts which are treated with biocides. The other five informants said that their companies made an informed choice not to include biocide treated articles in their range of products. The majority did not test the products themselves, but one informant commented:

*“It’s one thing what you ask for and another thing what you actually get. In other words, you can never be a 100 percent sure, but since biocide treatment involves a cost for the manufacturer, I don’t think we get biocide treated goods by accident.”*

Informants from the two companies that did import biocide treated products were asked questions about aim, need and efficiency of biocide treatment, risks associated with biocide treatment and alternatives to biocide treated articles.

Regarding the main reasons for biocide treatment of the products, one of the two informants reported “protection of the product during transportation and storage”. The other informant stated that the company did not aim to import biocide treated products per se, and that they always request products or components without biocides, but that they sometimes purchased minor parts of shoes containing biocides for use in production in their own factories. None of the informants reported that they had refrained from importing a product due to biocide treatment.

None of the two informants knew what biocidal substances are used in the imported products. Both assumed that biocides eventually leak from the products. Allergies and bacteria resistance were mentioned as examples of risks associated with biocides in shoes.

All seven informants were asked questions about information in the supply chain and laws and regulations. When asked to what extent suppliers provide substantial information on biocide treatment, informants reported that they generally get the information they need from their suppliers to some or great extent.

Comments on information in the supply chain revealed that communication with suppliers is mostly well-functioning, but since there are many links (sub-contractors) in the supply chain it can still be difficult to get sufficient information. Several informants described the limiting factor for getting information on biocide treatment being the suppliers’ level of knowledge rather than their ambition to provide relevant information and adapt to the customers’ requirements. One informant commented:

*“My opinion is that it is the suppliers’ level of knowledge about biocides that limits what information they give us. They want to be able to deliver the products that we want to buy. Thus, we need information and knowledge about biocide treatment that enables us to explain to them what we want.”*

Several informants mentioned that they have staff employed in the manufacturing countries in order to facilitate communication with suppliers and quality control.

None of the companies importing biocide treated products reported to actively inform their customers about the treatment. A majority said they sometimes get questions from customers and purchasers regarding biocide/anti-bacterial treatment of products. Comments on how the companies could improve their work related to biocide treated consumer products dealt with getting more information, closer collaboration or more support from the Swedish Chemicals Agency and that clear and specific regulations and requirements would support this work both by making it easier for the companies to formulate requirements and by the suppliers adapting to the rules.

One (of the two) “biocide” companies and two (of the five) “non-biocide” companies reported that they were aware of the upcoming Biocidal Products Regulation. Five informants reported that their companies had been in contact with the Swedish Chemicals Agency at some point and all seven stated that they had used information from the Swedish Chemicals Agency, e.g. from the website.

At the end of the interview, one informant made a concluding remark:

*“Whenever there is a case that needs further investigation we try to get relevant information. That is how we learn and build knowledge about this issue. It takes a long time to build a good reputation, we are anxious to keep our good reputation. We appreciate the open and collaborative climate within the shoe trade organisation.”*

### **Concluding remarks**

- Companies importing biocide treated products feel that they do not have enough knowledge regarding biocides.
- Biocides in products are considered a relevant issue in the shoe industry, and many respondents reported it to be a topic discussed within the sector organisation.
- The responding companies give the impression to be rather involved in the production of the products that they import. Many see possibilities to influence production and material choices, but request clear and branch specific information as support in this area.
- Respondents rate the information they receive from suppliers as good, but the many levels in the supply chain and the large number of suppliers complicates the information exchange. The general level of knowledge in the supply chain was also reported to be a limiting factor.

#### **3.1.2. Sports clothing**

Representatives from five companies importing sports clothing were interviewed. Two of the informants reported that their company imports biocide/anti-bacterially treated products. Two said that they did not and one of those described it as an informed choice by the company not to include biocide treated articles in their range of products, she commented:

*“We have good control of our own range of products and we do not use biocidal substances, however we do not check products from other brands that are sold in our stores. We do have requirements concerning chemicals in products and we assume our suppliers meet those requirements.”*

One informant did not know whether the company imported biocide treated products or not.

Informants from the two companies that did import biocide treated products were asked questions about aim, need and efficiency of biocide treatment, risks associated with biocide treatment and alternatives to biocide treated articles. Both informants listed “sales argument” and “anti-bacterial effect during use of the product” as main reasons for biocide treatment of (primarily) sports underwear. Both also knew what biocidal substances that were used in the products. Furthermore, one informant described the type of biocide treatment technique used to prevent leakage, but added that they concurrently are looking for alternative, non-biocidal treatments. None of the two informants said they had refrained from buying a product due to biocide treatment, but reported to closely monitor what substances are used in the products. General environmental risks related to silver chloride, i.e. negative influence on aquatic organisms and water treatment processes in sewage plants were mentioned as examples of risks associated with biocides in sports clothing.

All five informants were asked questions about information in the supply chain and laws and regulations. When asked to what extent suppliers provide substantial information on biocide treatment, there were mixed answers, but the general view was that information generally is scarce. Comments revealed that information about biocides generally has to be requested.

Regarding information to consumers about biocide treatment, none of the companies selling biocide treated products actively provided more information than is available on the product package. A majority of the companies reported that consumers turn to them with questions about antibacterial treatment.

Comments on how the companies could improve their work related to biocide treated consumer products dealt with improving requirements, product development and finding alternative treatments.

The two “biocide” companies and one of the “non-biocide” companies reported that they were aware of the upcoming Biocidal Products Regulation. Three companies had been in contact with the Swedish Chemicals Agency at some point and all five informants stated that they had in some way used information from the Swedish Chemicals Agency, e.g. from the website.

### **Concluding remarks**

- Most companies rate their knowledge concerning biocides as sufficient.
- Sports clothing is one out of three product categories where a respondents can name the specific active substances used. Respondents also have a decent level of detail knowledge regarding risks.
- This is the only product category where the main reason for biocide treatment is mentioned to be a sales argument.
- It is quite common that customers ask questions regarding anti-bacterial treatment of sports clothing.
- Information in the supply chain is seen as limited and only provided upon request.

### **3.1.3. Bedroom textiles**

Representatives from six companies importing bedroom textiles (the survey focused on bed linen and pillows) were interviewed. One informant was not sure whether they imported biocide treated products or not, but others said that it was an informed choice not to include biocide treated articles in their range of products. The common view was that there is no need and that it is unlikely that suppliers would add biocides to products unless the buyer wants it. One informant commented:

*“There are of course suppliers that cheat, but we take random samples and test them. Besides, I think it is unlikely that someone would add biocides if it’s not needed and they don’t get paid for it, it is expensive to use biocides!”*

As none of the companies stated that they import biocide treated articles, the question “From your perspective, to what extent do your suppliers provide substantial information on biocide treatment?” was considered irrelevant. However, the common view among informants was that suppliers would probably provide sufficient and relevant information on request.

The majority of the informants reported that they do not usually get questions from consumers about anti-bacterial treatment of products. Two companies were primarily wholesale dealers and they said that their customers demand detailed information/documentation about chemicals in the products. When asked how they could improve their work related to biocide treated consumer products, the informants at the wholesale dealers described that changes in their customers’ requirements are strong signals for them to adapt their routines. Another informant commented:

*“We’ve discussed whether to try to influence or put demands on other brands that are sold in our stores regarding biocide treated consumer products, e.g. sports clothing. I think we are in a good position to do that.”*

Half of the informants said that they were aware of the upcoming Biocidal Products Regulation. Two of them reported to have received information through trade sector groups e.g. from the Swedish Chemicals Agency. Four informants reported that their companies had been in contact with the Swedish Chemicals Agency at some point and they also stated that they had used information from the Swedish Chemicals Agency, e.g. from the website.

### **Concluding remarks**

- This is the only product category where none of the contacted companies claim to import biocide treated products. Most respondents state that they actively refrain from importing such products, and that they put efforts into offering ecological products.
- The respondents’ rating of their biocide knowledge is mixed, with half of them reporting to have sufficient knowledge.
- The respondents rarely get questions from customers regarding biocide treatment.

### **3.1.4. Toys**

Representatives from seven companies importing toys were interviewed. Three of the seven informants reported that their company imports a few biocide treated products. One informant stated that they do not import biocide treated goods and that it was an informed choice not to include such articles in their range of products. Three informants were not sure whether any of their products were containing biocides. One informant commented:

*“We import ready-made products; it is possible that they are treated with biocides. But we have requirements of what the products may and may not contain.”*

Informants from the three companies that did import biocide treated products were asked questions about aim, need and efficiency of biocide treatment, risks associated with biocide treatment and alternatives to biocide treated articles. “Preventing mould” was mentioned as one reason for biocide treatment of certain products. Two of the three informants said they normally ask the supplier to replace the biocide with other, less harmful substances. None of the three have special requirements concerning biocides in products and none reported that they had refrained from importing a product due to biocide treatment. One of the three informants knew what biocidal substance was used in the product. No one had knowledge of what happens with the biocide when the product is used by the consumer and they could not give any examples of risks associated with biocides.

All seven informants were asked questions about information in the supply chain and laws and regulations. When asked to what extent suppliers provide substantial information on biocide treatment, there were mixed answers. The majority of the companies importing biocide treated products reported getting sufficient information only to little or some extent. The most frequently expressed view was that the companies themselves have to request information about biocides from suppliers (but only the company not importing biocide treated products claimed to do so).

None of the seven informants reported that the companies actively inform consumers about biocide treatment, but three of the informants said that they sometimes get questions from consumers and purchasers about chemicals in general.

Comments on how the companies could improve their work related to biocide treated consumer products covered for example learning more about biocides and support from the Swedish Chemicals Agency in terms of “trade customised” information (e.g. what substances are prohibited, in what toy products or materials they can usually be found) in English and/or Chinese (so that it can be forwarded to suppliers and manufacturers abroad). Two informants (from the companies that were not sure whether they had any biocide treated products in their product range) described their strategies in relation to biocides and chemicals in general:

*“We’re a small business with limited resources; we don’t have any chemist in our staff. To us, it is a matter of buying or not buying a product from a supplier. We cannot influence what substances Chinese toy manufacturers use in their products because we’re too small. We either decide to buy the product because it’s ok, or move on.”*

*“We have no in-house competence in this field, we trust our suppliers to be serious and that they place appropriate demands on the manufacturers. We choose to import only “safe” products, i.e. we avoid products like make-up, play dough etc.”*

Informants from two (of three) “biocide” companies reported that they were aware of the upcoming Biocidal Products Regulation. The majority of the informants (six out of seven) reported that their companies had been in contact with the Swedish Chemicals Agency at some point and the same informants stated that they had used information from the Swedish Chemicals Agency, e.g. from the website.



## Concluding remarks

- The toy companies import complete products and are not always involved in the production stage.
- Most companies rate their knowledge level regarding biocides as insufficient, and request clear and branch specific information as support in this area.
- One informant can name a biocidal substance used in his company's products.
- The respondents mainly rely on the suppliers/producers to live up to applicable rules and regulations.

### 3.1.5. *Building material*

Representatives from five companies importing building material (focusing on kitchen and bathroom interior and flooring) were interviewed. Three of the five informants reported that their company imports biocide treated products. The other two informants did not know whether their company imported biocide treated products or not.

Informants from the three companies that did import biocide treated products were asked questions about aim, need and efficiency of biocide treatment, risks associated with biocide treatment and alternatives to biocide treated articles. "Lasting quality" was mentioned as being the main reason for biocide treatment of the products. There were mixed answers as to whether the companies are actively looking for alternatives to biocide treatment of products. One company referred to the head office abroad where significant resources are allocated to environmental issues and product development. None of the informants reported that they had refrained from importing a product due to biocide treatment, but they stressed that these decisions are made in other departments in the corporate group. Two of the three informants knew what biocidal substance was used in the products and they also accounted for what happens with the biocide in the product after use. The same companies also mentioned some risks, e.g. bacterial resistance to biocides.

All five informants were asked questions about information in the supply chain. When asked to what extent they think suppliers provide substantial information on biocide treatment, only one informant reported that the company receives sufficient information from their suppliers. According to the majority of the informants, suppliers' information on biocides generally is sparse or non-existing.

None of the companies reported that they actively inform consumers about biocide treatment, apart from what is on the packages of the products, and questions from consumers about this issue are not very common.

When asked how the companies could improve their work related to biocide treated consumer products, the common view was that the question was irrelevant. By the majority, biocide treatment of products was seen as a relatively insignificant issue. Decisions and responsibility related to biocide treatment were seen primarily as issues for manufacturers or staff at corporate group level. One informant explained:

*"We have no ambition to be more active in this. As we see it, it is the responsibility of the manufacturers that products are safe and to follow all the rules and regulations."*

One of the informants (from companies importing biocide treated products) reported that he was aware of the upcoming Biocidal Products Regulation, while the other four said they were not. Four out of five informants reported that their companies had been in contact with the

Swedish Chemicals Agency at some point and three stated that they had used information from the Swedish Chemicals Agency, e.g. from the website.

### **Concluding remarks**

- The informants at companies who knowingly import biocide treated products rate that they have a quite high level of knowledge regarding biocides. They can name the substances used and describe risks connected to biocides.
- Several companies are part of large multinationals. Import is often handled centrally at a large scale (i.e. EU level). Many informants describe that knowledge and decision making in this area is often located in specific departments abroad.
- Information in the supply chain is not well developed on this topic, but the product producing companies rely on their suppliers not to use harmful substances.
- The issue of biocides in products is not seen as very significant.

## **3.2. The Swedish Water and Wastewater Association**

A representative from the Swedish Water and Wastewater Association (SWWA) was interviewed regarding the problems with biocides in wastewater, work to reduce biocide levels and the upcoming new regulations on biocides in consumer goods.

### **Biocides in the wastewater**

The SWWA informant claims to have enough knowledge about biocides and has followed this topic for almost two decades. Biocidal substances such as silver ions, Triclosan and Triclocarban used in sports clothing have been found in wastewater treatment plants. The antibacterial silver that reaches the waste water treatment plants does not decompose but continues to the receiving waters or is deposited in the sludge.

### **Work to reduce biocides in wastewater**

According to the SWWA, leakage from biocide treated products is a big problem for the wastewater treatment plants. The informant commented that every time clothes or cutting boards are washed, the biocidal substances leak into the water and reach the treatment plants. This affects the water purification processes, and persistent substances can cause negative impacts in rivers and lakes. These substances also have a tendency to remain in the sludge, which obstructs the nutrient cycle between urban and rural areas.

When asked to estimate the percentage of members who control active biocide substances in wastewater treatment the SWWA representative commented:

*“34 wastewater treatment plants control silver levels. Together, they treat approximately 50 percent of the wastewater generated in Sweden. These treatment plants are REVAQ certified<sup>1</sup>. The plants control the silver levels since only sludge from REVAQ certified wastewater treatment plants may be spread on Swedish soils. More plants would do it if there were legal requirements to control silver levels.”*

When asked to what extent the SWWA members report the levels of biocidal substances in their environmental reports, the respondent was vague. He commented:

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<sup>1</sup> <http://www.svenskvatten.se/Vattentjanster/Avlopp-och-Miljo/REVAQ/om-REVAQ/>

*“If there were legal requirements, all plants would report it. About 50 percent do it voluntarily because they are REVAQ certified”.*

The SWWA informs the general public and manufacturing companies about problems with biocides in wastewater treatment plants through debate articles, information on their website and email. The SWWA also engages in dialogue with retailers, and commented:

*“It is better to work with stores selling biocide products. Direct dialogue gives better effect”.*

The SWWA prioritises the issue of biocides in wastewater highly. The informant commented:

*“The biocides affect treatment processes or sludge quality. High concentrations of biocides require several purification steps before the release to the public sewer. In addition, biocides are a major threat to our efforts to achieve a sustainable wastewater treatment in Sweden”.*

The SWWA mainly conducts information work regarding biocide products among their members. They have member workshops and seminars where problems with biocides are discussed, and distribute information material. They also inform households and the public about chemicals through sending out brochures about clean water and arranging information campaigns on the metro, buses and trams in Stockholm, Göteborg and Malmö.

### **The upcoming new regulations on biocides in consumer goods**

The SWWA is aware of the new demands on biocidal products that will be introduced through the new Biocidal Products Regulation. A final comment from the representative was:

*“The metal levels must be reduced in order to ensure the sludge quality and reduce emissions to rivers and lakes. The Swedish Chemicals Agency should come with a proposal to ban silver in clothing”.*

### 3.3. Municipal functions for environment and consumer advice

Questionnaires were sent to municipal offices for planning/environment and consumer advice. Only planning/environment respondents were asked to rate their level of knowledge concerning biocides in consumer articles. The majority of them, 83 percent, reported having no or insufficient knowledge, while 16 percent said that they had enough or very good knowledge (see Figure 2).

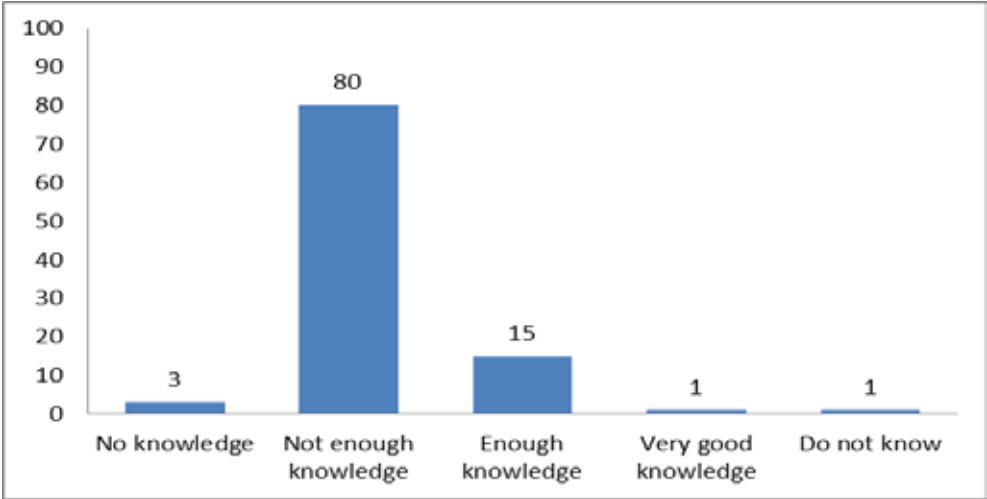


Figure 2 Answers to the questionnaire question "What is your level of knowledge about biocides in consumer articles?" (Percent of respondents from municipal planning/environment offices)

In spite of this rather low level of self-rated knowledge, 94 percent of the respondents in planning/environment offices answered "yes" when asked whether they knew of any types of consumer articles that may be treated with biocides. The respondents in consumer advice offices were also asked this question and the corresponding percentage among them was 52 percent (see Figure 3).

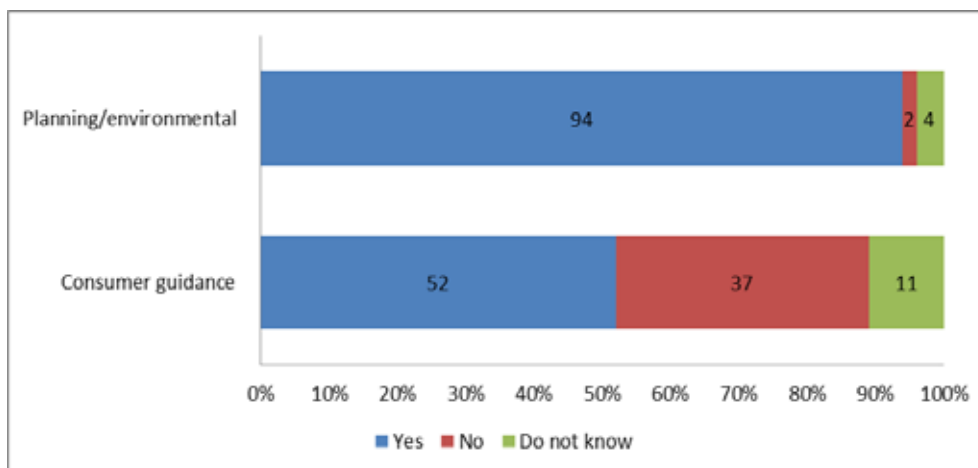


Figure 3 Answers to the questionnaire question “Do you know of any types of consumer articles that may be treated with biocides or antibacterial substances?” (Percent of respondents from municipal offices for planning/environment and consumer advice)

Furthermore, 77 percent of the planning/environment respondents and 46 percent of the consumer advice respondents could give examples of such articles. The most frequently mentioned categories of consumer articles are shown in Table 4 below (categories derive from the content analysis of the data).

Table 4 Most frequent categories of answers to the questionnaire question “Give examples of consumer articles which may be treated with biocides” from respondents in offices for planning/environment and consumer advice

	Planning/environment	Consumer advice
1	Clothing	Clothing
2	Hygiene products	Domestic detergents
3	Shoes	Hygiene products
4	Domestic detergents	Shoes
5	Textile products (e.g. carpets, blankets) Kitchen appliances (e.g. refrigerators)	Cleaning articles (e.g. washcloths)

Among those who mentioned clothing as an example, a majority specifically pointed out sports clothing. In the hygiene products category, toothpaste was by far the most frequent example.

As shown in Figure 4 below, 55 percent of the environment respondents thought that biocide treated consumer articles were perceived as a problem to no or little extent in their municipality. 19 percent stated that they thought it was seen as a problem to a certain or a large extent. The majority of adviser respondents did not know to what extent biocide treated consumer products was seen as a problem in their municipality and 39 percent believed it was of no or little importance.

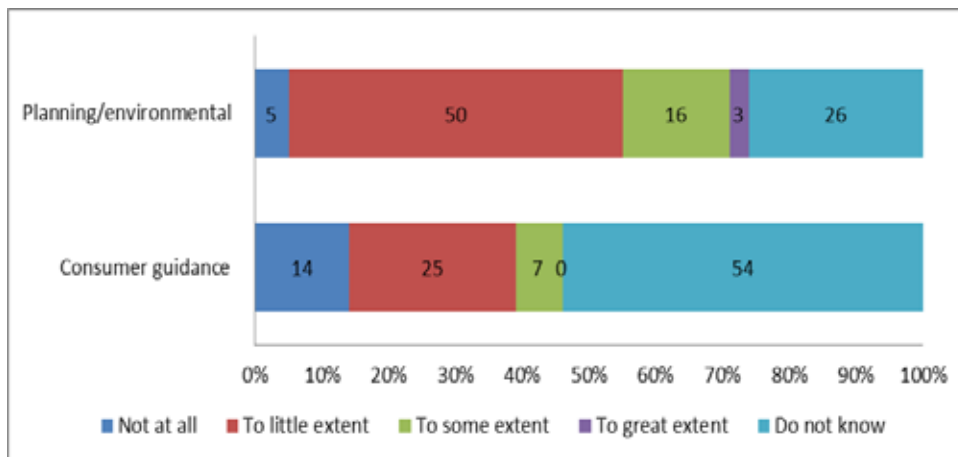


Figure 4 Answers to the questionnaire question “From your perspective, to what extent is biocide treated consumer articles perceived as a problem or risk in your municipality?” (Percent of respondents from offices for planning/environment and consumer advice)

Comments relating to answers to the question above were given by 28 percent of the planning/environment respondents and 24 percent of the consumer advice respondents. The prevailing view in both groups was that the public’s awareness of biocides in goods is generally very low, as is knowledge about risks associated with such substances. One planning/environment respondent commented:

*“I don’t think people are aware that some products are treated with these substances and therefore consumers are exposed without knowing it. We know that if you have knowledge about something [a risk], you become more careful.”*

A majority of the commenting advisers pointed out that very little attention is paid to these issues by the public and the media in general. One respondent commented:

*“In my opinion, this is a distressing issue, but I don’t feel that this is a problem consumers complain of and ask questions about.”*

A majority of the commenting planning/environment respondents described that they are aware of the fact that biocides in consumer articles pose a risk and that they eventually leach out and end up in sewage plants and waters. At the same time, planning/environment respondents said that they lack knowledge about the magnitude of the problem, for example how much and how often biocide treated products are sold to and used by consumers. They reported that there is usually little or no discussion about biocides in consumer goods in the municipalities’ environment departments. Very few are working with these issues (e.g. informing the public about risks, measuring biocide content in sewage water, supervising or checking biocide treated articles in the retail trade). One planning/environment respondent commented:

*“There is probably some awareness among the municipality’s environment and health protection inspectors that biocides in sewage water pose risks to the environment and people’s health. Despite that, no one is talking about it, we are not giving any information to the public or work with any projects related to these issues”.*

Some of the commenting adviser respondents (15 percent) stated that they either knew of some measures (related to biocides in consumer products) that had been taken in their municipality or had taken some action themselves (e.g. sought information or informed consumers). Two respondents commented:

*“I have tried to get information about this from the municipality’s purchasing department and Agenda 21, but no one could give me any answers.”*

*“The environment department, and to some extent the consumer advice department, are active in working towards a non-toxic environment. We try to work preventively by conducting surveys and get publicity about the results.”*

When asked to describe perceived problems or risks in relation to biocide treated consumer goods, 67 percent of the planning/environment respondents and 46 percent of the adviser respondents answered. Although almost half of the commenting consumer advisers stated that they could not give any examples of risks due to lack of knowledge, some did mention health risks for humans, bacteria resistance and contamination of waters. Among planning/environment respondents, the most frequently mentioned risks were bacterial resistance, contamination of waters and harmful effects on aquatic organisms and health risks for humans, e.g. allergies due to direct exposure. Disturbance in waste water treatment processes and biocide substances being spread via sewage sludge were mentioned less frequently.

A clear majority in both groups (93 percent of the planning/environment respondents and 94 percent of the adviser respondents) reported that they very rarely or never get questions about biocide treated consumer articles from the public.

In addition, the planning/environment respondents were asked if there is any on-going work regarding biocides in consumer articles in their municipality. The majority of them (81 percent) stated that there is no work going on in their municipality. Nine percent reported that they do address this issue in their work and ten percent said they did not know.

The consumer advisers were asked if they work actively with informing consumers about biocides/anti-bacterial substances in consumer products. A clear majority (92 percent) answered that they do not, five percent answered “yes” and the remaining three percent said that they “do not know”.

The advisers were also asked if they usually inform consumers about a number of issues related to biocides and anti-bacterial substances in consumer products: health risks, leaching of biocides, environmental risks (due to leaching from products), how to get information about biocides in products, bacterial resistance and alternatives to biocide treated products. For all alternatives a clear majority stated that they do not usually inform consumers about these topics.

When asked whether they knew about the upcoming new regulations on biocides in consumer articles a clear majority in both groups said they did not know (77 percent of the planning/environment respondents and 89 percent of the consumer advisers).

### **Concluding remarks**

- Environment respondents generally have some knowledge about biocides in products and awareness about the associated risks but mostly rate their knowledge as insufficient. Consumer advisers are in general less familiar with the issue.
- A clear majority of the environment respondents and half of the consumer advisers can give examples of biocide treated products. Clothes are mentioned most frequently.
- Half of the environment respondents believe that biocides in products are considered a minor issue in the municipality, with very little efforts or discussions on the topic. Few municipalities work actively with the issue.

- The respondents in both groups rarely or never receive questions about biocide treated consumer articles from the public.

### **3.4. Consumer organisations**

Questionnaires were sent to two interest organisations (the Swedish Society for Nature Conservation and the Swedish Consumers' Association), with the same set of questions as sent to the consumer advice offices.

The respondents knew of types of consumer products that are sometimes treated with biocides and gave examples like shoes, clothing, kitchen worktops, washing machines and cleaning articles (Scotch Brite etc.).

Both of them answered “To great extent” to the question “From your perspective, to what extent are biocide/anti-bacterially treated consumer articles perceived as a problem or risk in your organisation?”. Comments revealed concern about the lack of knowledge about the consequences (spread, leakage, effects on humans and the environment) of biocides in consumer products.

When asked to name and describe perceived problems or risks related to biocides in consumer products, the respondent from the Swedish Society for Nature Conservation mentioned bacterial resistance and spread of chemicals through products in which they are not really needed in the first place:

*“Biocide treatment is often presented as a solution to ‘problems’ that the consumers are not even aware of until the market creates a ‘need’...”*

The respondent from the Swedish Consumers' Association mentioned that biocides have negative effects on aquatic organisms and that there is not enough knowledge about risks and consequences regarding nanoparticles.

Both respondents reported that consumers turn to the organisations relatively often for information about biocidal/anti-bacterial products. One respondent commented that there is concern among consumers about more and more products being treated with biocides, causing problems in the future.

Both organisations are active in spreading information to consumers about biocides/anti-bacterial substances in products. They also reported that they usually inform consumers about health risks, leakage of biocides from products, environmental risks (due to leakage), bacterial resistance, how consumers can get more information about biocides/anti-bacterial substances in products and alternatives to biocide treated products. Advising consumers on how to get more information about biocide treatment was pointed out as the most difficult information task, the reason being that such information is often not available to consumers.

Both respondents were aware of the upcoming Biocidal Products Regulation.



## **4 Discussion**

### **4.1 Methodology and data quality**

The study presents both quantitative and qualitative data, in line with the goal and scope of the study. By using interviews and questionnaires, both in-depth and more general descriptions of the level of knowledge regarding biocides in consumer articles were obtained.

The investigated product categories all have a direct or indirect influence on the daily life of most consumers, through different paths of potential exposure. In contrast to shoes and clothes, building material is not handled by all consumers on a daily basis, but it is still an integral part of the environment at home and at work.

Results from the interviews with import companies are valid for a sample of companies within each product category and cannot be said to represent the trades of all companies importing such goods. The aim of the interviews was to elucidate qualitative as well as some quantitative aspects of the companies' knowledge and reasoning concerning biocides in consumer products.

Assessment of the interviews with import companies shows that the informants found the questions relevant, even though some of them had little or no knowledge about biocides in consumer products. Criteria for selection of informants (persons with knowledge about design and/or function of products and influence on/responsibility for what products the company imports) were judged to be met in all cases included in the survey. In some cases, the informants referred to other divisions or parent companies abroad for detailed competence on chemicals in products and environment and health related issues, but their answers still give an indication of the level of knowledge and strategies used in the Swedish subsidiary company or division.

Regarding the questionnaire to municipalities the results are more quantitative, considering the relatively high response frequency (88 out of 290 and 121 out of 290 municipalities respectively for consumer advice and environment). These results are therefore more general and give a good understanding about the knowledge level within the two functions investigated, that is the consumer advice and the environment function.

Answers from informants at import companies and respondents to the questionnaires were consistently judged as being clear and pertinent, which suggests that the information collected in this survey is valid.

### **4.2. Knowledge levels**

It is not possible to compare knowledge levels in companies with the levels in municipalities or consumer organisations, since the questions asked were not the same and since the number of respondents in each group is very different.

The company respondents' ratings of their biocide knowledge are distributed over the entire scale, also within most of the product categories. Due to this, and to the limited number of respondents, it is difficult to point out a specific product category where knowledge level stands out in positive or negative direction.

There seems to be a higher estimated knowledge level among the respondents who do not import biocide treated products, which is consistent with the finding that most of these report

the exclusion to be an informed and conscious choice. Such decisions were reported from most of the product categories. However, there are representatives from all product categories, except shoes, who claim to have no knowledge at all about biocides. Chemical products were mentioned as examples by the interviewed companies, something that indicates that the respondents are not used to differentiate between chemicals in products in general and biocide treated products. Although the new requirements for biocide treated articles were recognised by 40 percent of the respondents, there were also requests for more information from the authorities and there is clearly a knowledge gap to be filled.

The results from the municipal planning/environment and consumer adviser questionnaires show that environment respondents generally have some knowledge about biocides in products and awareness about the associated risks while consumer advisers are less familiar with the issue. Both groups estimate that biocide treated consumer articles are perceived as a problem only to a small extent and report that little activity and effort is directed to these issues in their municipality. This could be used to motivate future action, such as increased information and dialogue in municipalities on the topic of biocides.

The respondents from the Swedish Water and Wastewater Association, the Swedish Society for Nature Conservation and the Swedish Consumers' Association report to be well informed and aware of issues and risks connected to biocide treated consumer products. The respondents from these organisations also claim to get concerned questions from the public, and work to inform and educate consumers about the topic.

## 5 Conclusions

It is a challenge to describe knowledge in a comprehensive way. The complementary use of interviews and questionnaires in this study served well for covering different aspects of knowledge, both qualitative and quantitative. The main conclusions relating to knowledge levels concerning biocides and treated articles among importing companies, municipalities and the general public can be summarised as follows:

- The topic of biocides in consumer products is generally conceived as important, within importing companies as well as consumer organisations and municipalities.
- Importing companies and consumer organisations work more actively with this issue than the municipalities.
- The new requirements for treated articles in the Biocidal Products Regulation are recognised by 40 percent of companies, 25 percent of environment officers and 11 percent of consumer advisers.

### **Companies:**

- Most of the companies that do not import biocide treated products claim that this is based on an informed decision. Representatives from all product categories, except building material, report on such decisions and rate their knowledge level as sufficient.
- The only product category where none of the interviewed companies import biocide treated products is bedroom textiles.
- Representatives from toys, sports and building material companies can name biocide substances used in their products.
- In general, companies find that information on biocide treatment has to be requested from the suppliers and that the information provided can be sparse. The number of sub-contractor levels and lack of knowledge in the supply chain are limiting factors.
- More industry specific information and support from the Swedish Chemicals Agency is requested by many companies.

### **Municipalities:**

- Respondents from planning/environment offices are aware about biocides in consumer products and the associated risks. However, they mostly think that they do not have enough knowledge. Consumer advisers are less familiar with the issue.
- Both municipal functions estimate that biocide treated consumer products are not seen as a major problem by the general public and report that they do not get many questions on the subject.
- Few municipalities work actively with the issue of biocide treated products.

### **Trade and interest organisations:**

- The respondents are well informed about different aspects of biocide treated products and concerned about the associated risks. They get questions from the public and see some general awareness regarding the issue.
- The organisations work to inform the public about problems and risks with biocides in consumer products.

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# Appendices

## Appendix A – NACE codes and number of importers for the selected product categories

Table A1 NACE<sup>2</sup> codes and number of companies for the selected product categories

Product category	NACE code and description	Number of companies	
		Total	Import value > 10 MSEK
Shoes	15200 Manufacture of footwear	30	6
	46160 Agents involved in the sale of textiles, clothing, fur, footwear and leather goods	330	20
	46420 Wholesale of clothing and footwear	1 045	161
	47721 Retail sale of footwear and leather goods in specialised stores	459	15
Sports clothing	46160 Agents involved in the sale of textiles, clothing, fur, footwear and leather goods	330	20
	46420 Wholesale of clothing and footwear	1 045	161
	4771 Retail sale of clothing in specialised stores	5 519	68
Bedroom textiles	46410 Wholesale of textiles	1 001	59
	47510 Retail sale of textiles in specialised stores	1 395	2
Toys	46499 Wholesale of other household goods	989	119
	47650 Retail sale of games and toys in specialised stores	472	3
Building material	46130 Agents involved in the sale of timber and building materials	85	9
	46731 Wholesale of wood and board	1 060	185
	47521 Retail sale of building materials in specialized stores, general assortment	273	14

<sup>2</sup> Statistical Classification of Economic Activities in the European Community

[http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST\\_NOM\\_DTL&StrNom=NACE\\_RE V2&StrLanguageCode=EN&IntPcKey=&StrLayoutCode=HIERARCHIC](http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NACE_RE V2&StrLanguageCode=EN&IntPcKey=&StrLayoutCode=HIERARCHIC)

## **Appendix B – Interview questions for importing companies**

### **Background information**

- a) What is your position?
- b) Do you have such a role in the company that you can influence what products to import, in terms of design / function / quality / environment?
- c) Who in the company should I talk to instead?
- d) Do you import products in the category [...]?

### **1. Biocides and biocide treatment**

- a) Do you know what biocides are?
- b) What is your level of knowledge about biocides? (No knowledge, Not enough knowledge, Enough knowledge, Very good knowledge)
- c) Are some of the products you import treated with biocides?
- d) Is this based on an informed decision?
- e) Can it be that your imported products are biocide treated without your knowledge?

### **2. Aim, need and efficiency of biocide treatment**

- a) What are the main reasons for biocide treatment of your imported products?
- b) Do you know what active substances are used in the treatment of your imported products?
- c) Do you know what happens with the active substance after a period of use of the product (and possibly washing)?

### **3. Risks associated with biocide treatment**

- a) Do you know of any risks associated with the biocide treatment of our imported products?

### **4. Alternatives to biocide treatment**

- a) Do you look for alternatives to the biocide treatment?
- b) What do you do when you look for alternatives?
- c) Have you ever required products without biocides?
- d) Have you ever refrained from import due to the fact that the product was treated with biocides?

### **5. Information in the supply chain**

- a) From your perspective, to what extent do your suppliers provide substantial information on biocide treatment? (Not at all, To a little extent, To some extent, To a large extent, To a very large extent, I do not know)

- b) What information about the biocide treatment do you get from manufacturers of your imported products?
- c) Do you inform your customers about the biocide treatment?
- d) Do you get questions from customers about biocide treated products?
- e) From your perspective, how could you work more actively with biocide treated products?

## **6. Laws and regulations**

- a) Are you aware of the new requirements for biocide treated products in the new EU Biocidal Products Regulation which enters into force on 1 September 2013?
- b) Have you had contact with KemI before?
- c) Have you used information from KemI earlier, e.g. web site?
- d) What is your level of knowledge about chemicals in products in general? (No knowledge, Not enough knowledge, Enough knowledge, Very good knowledge, I do not know)

## **Conclusion**

Thank you for taking the time to answer the questions!

Is there anything else you want to add?

Do you want KemI to send more information on the EU's new Biocidal Products Regulation?



## **Appendix C – Interview questions for SWWA**

### **1. Biocides in sewage treatment plants**

- a) What is your level of knowledge about biocides? (No knowledge, Not enough knowledge, Enough knowledge, Very good knowledge)
- b) Do you know what biocidal active substances can be found in sewage treatment plants?

### **2. Work to reduce biocides in the waste water**

- a) To what extent do you perceive biocide leakage from consumer products as a problem? In what way it is perceived as a problem?
- b) What percentage of SWWA members monitor the occurrence and level of biocidal active substances in the treatment process from waste water to sludge and purified water?
- c) What percentage of your members report on the level of active substances in their environmental reports?
- d) Do you inform the general public and the manufacturing companies about problems with biocides in sewage treatment?
- e) From your perspective, to what extent does SWWA prioritise the issue of biocides in waste water?
- f) Are your members conducting any work regarding biocide treated consumer products? What kind of work?

### **3. Laws and regulations**

- a) Are you aware of the new requirements for biocide treated products in the new EU Biocidal Products Regulation which enters into force on 1 September 2013?
- b) Have you had contact with KemI before?
- c) Have you used information from KemI earlier, e.g. web site?

### **Conclusion**

Thank you for taking the time to answer the questions!

Is there anything else you want to add?

Do you want KemI to send more information on the EU's new Biocidal Products Regulation?

## Appendix D – Questionnaire for Planning/Environment Offices

1. In which municipality do you work?
2. What is your position? (Environmental manager, Environment/health inspector, Other)
3. What is your level of knowledge about biocides in consumer articles? (No knowledge, Not enough knowledge, Enough knowledge, Very good knowledge, I do not know)
4. Do you know any types of consumer articles that may be treated with biocides or antibacterial substances?
5. Can you give examples of such products?
6. From your perspective, to what extent are biocide treated / antibacterial consumer products perceived as a problem in your municipality? (Not at all, To a little extent, To some extent, To a large extent, To a very large extent, I do not know)
7. What problems or risks with biocide treated / antibacterial consumer products are seen in your municipality?
8. How often do you get questions from the public about biocide treated / antibacterial consumer products? (Very rarely, Quite seldom, Quite often, Very often, Comment)
9. Is there any on-going work regarding biocide treated / antibacterial consumer products in your municipality?
10. Are you aware of the new requirements for biocide treated products in the new EU Biocidal Products Regulation which enters into force on 1 September 2013?
11. Other comments?

## **Appendix E – Questionnaire for Consumer advice offices and for Consumer organisations**

1. In which municipality / organisation do you work?
2. Do you know any types of consumer articles that may be treated with biocides or antibacterial substances?
3. Can you give examples of such products?
4. From your perspective, to what extent are biocide treated / antibacterial consumer products perceived as a problem in your municipality / organisation? (Not at all, To a little extent, To some extent, To a large extent, To a very large extent, I do not know)
5. What problems or risks with biocide treated / antibacterial consumer products are seen in your municipality / organisation?
6. How often do you get questions from the public about biocide treated / antibacterial consumer products? (Very rarely, Quite seldom, Quite often, Very often, Comment)
7. Do you work actively to inform consumers of biocide treated / antibacterial consumer products?
8. Do you inform consumers about
  - health risks associated with biocide treated / antibacterial consumer products;
  - leakage of biocides / antibacterial substances from treated products;
  - environmental risks associated with leakage of biocides / antibacterial substances from treated products;
  - the risk that bacteria develop resistance to biocides;
  - how to obtain information on biocides / antibacterial substances in articles;
  - alternatives to biocide treated / antibacterial consumer products?
9. Are you aware of the new requirements for biocide treated products in the new EU Biocidal Products Regulation which enters into force on 1 September 2013?
10. Other comments?





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**Swedish Chemicals Agency, P.O. Box 2, SE-172 13 Sundbyberg  
Phone: +46 8 519 41 100, Fax: +46 8 735 76 98, E-mail: kemi@kemi.se**