

## **Impact Analysis of Regulating Pentachlorophenol (PCP) in Consumer Products**

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### **Summary**

The Norwegian Government is proposing to regulate the production, import, export and sale of consumer products containing pentachlorophenol (CAS No 87-86-5) or its salts or esters, when the content of the substance in the product's homogenous components is greater or equal to 0.0005% by weight (5 ppm). Products containing less than this limit value may be sold legally.

The Norwegian Government has established national targets for eliminating or substantially reducing releases of priority hazardous substances by 2010 with a view to eliminating them

by 2020, (Prop. 1 S (2009-2010) from the Norwegian Ministry of the Environment, Proposition to the Parliament (Storting) for the 2010 budget year). The substances included in this target are given in the Government's list of priority hazardous substances (the priority list). Pentachlorophenol (PCP) is included in these national goals.

The most important application for pentachlorophenol (PCP) is impregnated wood but the substance is also present in items such as textiles for outdoor use. There are satisfactory alternatives for use in impregnated wood and textiles.

Documentation shows that PCP has serious adverse effects on health and the environment. PCP is classified as "Toxic in contact with skin and if swallowed" and as "Very toxic by inhalation." The substance is also classified as "Very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment."

Pentachlorophenol is absorbed into particles in soil, water and air and can be dispersed across long distances. Pentachlorophenol evaporates easily and is transported through the atmosphere. In areas with a cool climate, the substance will condensate and be deposited in the environment. It is believed that some pentachlorophenol is deposited in the Norwegian environment as a result of transport via the atmosphere. In the Arctic PCP has been detected in air, freshwater, seawater, ice and fish.

PCP has been found in men in Sweden and Latvia and in Inuit children. PCP has been measured in water, including drinking water and rain water, sediments, soil, breast milk, fat tissue and urine. The first peer-reviewed scientific study of PCP in animal life in the northern areas showed the occurrence of PCP in four Norwegian species of birds of prey, as described in the dossier on PCP to the Protocol on Persistent Organic Pollutants under the Convention on Long-range Transboundary Air Pollution (hereby referred to as the LRTAP Protocol on POPs).

Dioxins and furans are formed as by-products in the production of PCP, which is the reason PCP is usually contaminated with dioxins and furans. PCP is an important source of emission for dioxins, furans and hexachlorobenzene. All three of these substance groups have serious negative effects on human health and the environment.

The main purpose of this proposal calling for expanded regulatory control of PCP is to prevent a serious hazardous substance such as PCP from occurring in consumer products. Pentachlorophenol is prohibited in substances and mixtures at levels in excess of 0.1% by weight. Existing regulation covers imported solid products only to a small degree (only textiles and leather). The regulatory proposal will fill this gap in the existing regulations. Emissions of PCP have been sharply reduced in recent years. Imported products containing PCP are the most important remaining sources of potential emission and exposure to PCP. The present proposal will also prevent the future use of PCP in products.

The proposed regulation may result in somewhat increased costs but will bring about a reduction in the introduction of PCP into the environment and reduce the risk of health damages. In relation to the health and environmental effects of PCP—and because there are satisfactory alternatives involving less risk to human health and the environment—it is anticipated that the increased costs will be acceptable. The proposal will provide for the identical regulation of products produced inside and outside the European Economic Area. It will contribute to avoiding any future use in products and result in positive effects for

companies producing alternatives. The measure is not expected to result in significant socioeconomic costs. Furthermore, the benefits are expected to outweigh the costs on the basis of the anticipated positive effects the proposal will have on health and the environment. The proposal makes exemptions for applications that are already regulated.

## **1 Background and Previous Process**

### **1.1 Background**

Pentachlorophenol (PCP) covered by the proposed regulation is a priority hazardous substance and among the most dangerous substances we know. The effects of hazardous substances are very serious because they are persistent, they bioaccumulate and/or are toxic (for example, they can cause harm to the reproductive system and be carcinogenic). This means that the effects must be deemed irreversible. Hazardous substances are a serious threat to the health of future generations, to the environment and future food safety. Hazardous substances accumulate in nature and in the food we eat and possess properties that make it too late to take measures once the damage is done.

The Norwegian Government has established national targets for eliminating or substantially reducing releases of priority hazardous substances by 2010 with a view to eliminating them by 2020, (Prop. 1 S (2009-2010) from the Norwegian Ministry of the Environment, Proposition to the Parliament (Storting) for the 2010 budget year). The substances included in this target are given in the Government's list of priority hazardous substances (the Priority List). PCP is one of the substances included in the Priority List.

The efforts to reach these goals are based on the implementation of initiatives to address identified threats from chemicals hazardous to health and the environment even if the scientific data may not yet be fully documented. Regulation to reduce or discontinue use and release of chemicals hazardous to health and the environment is based on existing knowledge about the health and environmental properties of chemicals and the effects these may have in the short and long terms. This knowledge must be seen in the context of society's needs to protect health and the environment. The precautionary principle entails that, once a specific threat against health and the environment from chemicals has been identified, initiatives must be implemented to reduce or eliminate the threat even if the knowledge remains uncertain.

Imported products are the most important source of emissions of PCP in Norway. Consumer products containing PCP are important, since consumers lack the requisite knowledge about the health-related and environmental problems associated with their use and their disposal as waste. Consumers also do not have the requisite knowledge and ability to protect themselves against emissions. The entire population, including vulnerable groups such as children, may therefore be exposed to emissions from consumer products, either directly or indirectly via the environment. Reducing the quantity of PCP in products is also an important step toward reducing the quantity of hazardous waste that is generated. The strong increase in the import and sales of consumer products, coupled with the greater selection and shorter lifetime of products, may increase the dispersion of PCP. Most products are not intended to release the substance during use. However, there are several examples of chemical substances being released from products, so that the emission last over time (the product's entire life cycle) and space (people are exposed indirectly via the environment). This can occur for example as a result of washing or maintaining products treated with PCP, such as impregnated wood or

outdoor textiles. As opposed to industrial point sources, diffuse emissions from products are more spread out throughout society. The knowledge about the mechanisms and the scope of diffuse emissions from products is lacking.

PCP released from products and dispersed into the environment can result in human exposure by breathing, eating, drinking, or absorbing the substance through the skin. Dispersion of substances that are persistent and that are stored in living organisms constitutes a special problem because the substances take a very long time to be reduced to a level that does not involve risk of damage. PCP is just one of many health and environmentally hazardous substances, which, together with other similar substances, contribute to exposing consumers to a variety of different substances. The knowledge about the synergistic effects, i.e. how people and the environment are affected by exposure to several substances at the same time, has not yet been sufficiently documented.

The most effective manner in which to limit problems associated with a substance present in a number of different products is to regulate it as close to the source as possible and as early in the supply chain as possible. It is much more difficult to take steps to prevent uncontrolled dispersion of PCP at a later point in time, after the products have been put on the market. We therefore believe that the proposal to regulate PCP in consumer products fulfils the general principles of risk management.

The health and environmental effects of PCP will take many years to show. It is therefore critical that the risk associated with the use of products containing PCP should be limited. In order to limit the risk, we believe it is necessary to regulate consumer products that contain more than 0.0005% weight PCP or its salts or esters in the homogenous individual parts of products. Products containing less than this limit value may be sold legally.

## **1.2 Previous Process**

A proposal to regulate PCP in consumer products was included in a previous proposal to regulate a number of hazardous substances in consumer products, which Norway submitted for national consultation and notified to the ESA (pursuant to Directive 98/34/EC) and the WTO in 2007. In that connection, no specific comments were received for the regulation of PCP.

The limit value for PCP in products has been revised in the proposal which is now notified. The proposal is in line with the limit value for PCP in leather and textiles in existing regulation in section 3-4 of the Norwegian Regulation relating to restrictions on the manufacture, import, export, sale and use of chemicals and other products hazardous to health and the environment (Product Regulations) adopted by the Norwegian Ministry of the Environment and also the Danish regulation of PCP in products.

## **2 Problem Description**

### **2.1 Substance or Substance Group**

The regulatory proposal covers pentachlorophenol (PCP), CAS No 87-86-5 and its salts and esters.

## **2.2 Definitions and Limitations**

This proposed regulation covers pentachlorophenol and its salts and esters used in consumer products.

Consumer products here refer to any and all products intended for consumers and which can reasonably be expected to be used by consumers, in line with the definition set out in section 2 a of the Norwegian Act of 11 June 1976 No 79 Relating to the Control of Products and Consumer Services (Norwegian Product Control Act). Applications already regulated have not been evaluated as regards alternatives and costs.

The regulation does not cover food products, cosmetics, tobacco, food packaging, fertiliser, medical devices and means of transport, permanently mounted equipment for means of transport and tyres and similar accessories for means of transport. These applications will therefore not be described in greater detail in the environmental impact assessment.

## **2.3 Health and Environmental Impact – Risk Assessment**

### **2.3.1 PCP**

Pentachlorophenol (PCP) is very toxic, persistent and bioaccumulates in organisms. PCP is classified as “Toxic in humans in contact with skin and if swallowed” (R24/25) and as “Very toxic by inhalation” (R26). Damages have been recorded in the cardiovascular system, blood and liver when inhaled by humans. Tests on animals have shown that PCP has impacts on the immune system and central nervous system. It has also been classified as a carcinogen. Additionally, PCP is very toxic to many fish species. Pentachlorophenol is persistent in the environment and bioaccumulates in organisms. Decomposition of the sodium salt in PCP (NaPCP) into PCP and bioaccumulation depends heavily on pH value. The substance is classified as “Very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment” (R50/53) (Dossier prepared in support of a proposal of pentachlorophenol to be considered as a candidate for inclusion in the Annex I to the LRTAP Protocol on POPs, Warsaw, May 2008, prepared by *Mieczysław Borysiewicz*.)

The EU strategy for endocrine-disrupting substances covers, among other things, the preparation of a candidate list of potential endocrine-disrupting substances, which are to be prioritised for further investigation of endocrine-disrupting properties. PCP is included in Category 1 on this list. Category 1 comprises substances where there is more or less extensive documentation of endocrine-disrupting effects in living animals and which therefore should be prioritised for further study of these effects.

### **2.3.2 Dioxins and Furans**

Dioxins and furans are formed as by-products in the production of PCP, which is the reason products containing PCP are usually contaminated with dioxins and furans. PCP is an important source of emission of dioxins, furans and hexachlorobenzene. All these three substance groups have serious effects on health and the environment and are therefore strictly regulated.

Polychlorinated dibenzo-p-dioxins and dibenzofurans are usually called dioxins. This group consists of 75 different chlorinated dioxins and 135 different chlorinated furans, which all have varying toxic properties. Chlorinated dioxins and furans belong to the group of

hazardous substances that are the source of most concern. 2,3,7,8-Tetra chlorodibenzo-p-dioxin is considered the most toxic dioxin compound.

Studies show that dioxins are biologically persistent, but they can also, to a certain degree, be broken down by sunlight under favourable conditions. They accumulate in fat tissue in organisms and are concentrated in the food chain. The acute toxicity varies greatly between various animal species and for various dioxin compounds. Dioxins are acutely toxic for many mammals and birds. Chronic toxic effects have been detected in fish in extremely low concentrations.

In humans, effects on the immune system, skin rashes and the skin disease chloracne have been observed. Dioxins may also be carcinogenic. The substances may damage the foetus, the endocrine system and the nervous system under development, and they may also produce potential effects on the ability to reproduce. In humans, such damages are considered less probable with regards to the exposure relevant in Norway.

## **2.4 Occurrence**

### **2.4.1 PCP**

Pentachlorophenol is absorbed into particles in soil, water and air and can be dispersed across long distances. PCP evaporates easily and is transported through the atmosphere. In areas with a cool climate, the substance will condensate and be deposited in the environment. PCP has been detected in Inuit children and local fishermen in Quebec (Sandau C.D *et al.* 2002), which may suggest ingestion via sea food. Detection of PCP in men in Sweden and Latvia has been associated with the intake of fish from the Baltic Sea (Sjødin A. *et al.*, 2000).

The risk profile that was prepared as the basis for proposing the substance for inclusion in the LRTAP Protocol on POPs, shows that PCP was measured in water, including drinking water and rainwater, sediments, soil, breast milk, fat tissue and urine. The first peer-reviewed scientific study of PCP in animal life in the northern areas was published in 2004 and showed the occurrence of PCP in four Norwegian species of bird of prey—golden eagle, osprey, falcon and white-tailed eagle. It is believed that some pentachlorophenol is deposited in the Norwegian environment as a result of transport via the atmosphere. In the Arctic pentachlorophenol has been detected in the air, freshwater, seawater, ice and fish, which shows the potential for long-range transport (see risk profile prepared as the basis for including the substance in Annex I of the LRTAP Protocol on POPs).

### **2.4.2 Dioxins and Furans**

Dioxins are present everywhere in the environment in low concentrations as a result of natural and man-made thermal processes. Dioxin levels are higher in densely built areas than in more untouched natural areas.

Dioxins are accumulated in organisms and are soluble in fat and may therefore be found in foods from animals such as dairy products and fat fish. Dioxins have, among other things, been detected in trout but also in several other fish species in Mjøsa. The concentrations in fish from Mjøsa are below the EU limit values for fish. Dioxins have also been detected at low levels in fish and sediments in Northern Norway and in Svalbard. Dioxins have also been

detected in breast milk. The dioxin levels in the Norwegian fjords are declining, but still call for the issuance of dietary advice.

## **3 Range of Application**

### **3.1 Identified Applications**

PCP mainly occurs in imported products such as:

- Impregnated wood (timber, pallets, fencing materials),
- Impregnated textiles and rope primarily for outdoor use (for example, in awnings and sails),
- Can occur in articles such as treated wood, fibre and fabric products from South America, Africa, Asia (e.g. possibly in ornamental objects, wicker furniture),
- Leather products.

On a global basis, impregnated wood products total more than 75% of the use of pentachlorophenol (PCP). PCP is for instance used to protect newly cut timber against discoloration, such as blue stain. PCP-processed wood is used for, among other things, timber, fencing materials and pallets (see risk profile prepared as the basis for including the substance in Annex I of the LRTAP Protocol on POPs).

PCP is banned in Norway and the EU as a biocide and is not registered in the Norwegian Product Register. PCP was previously used as a slime-reducing agent in the paper industry but is not used in Norwegian production today.

Other important applications for PCP are textiles and ropes, especially for outdoor use, such as awnings, tents, sails, tarpaulins, etc. The United Kingdom has detected PCP in imported yarn where PCP has been used as a fungicide in rice and maize starches, with which the yarn has been treated. The yarn is dyed and processed further before it is used for weaving. In these instances, PCP will remain in the finished textiles. In the United States and France, it is mainly their armed forces that use PCP in textiles such as wool, cotton, linen and jute.

### **3.2 Consumption and Potential for PCP Discharge**

Imported products treated with PCP are the main source of the current emissions of PCP into the environment. These products also have the potential to contribute to the emission of dioxins and furans. In Denmark, dioxins have, among other things, been detected in imported textiles and leather goods treated with PCP (Danish Environmental Protection Agency, Survey of Dioxin in Denmark).

Pentachlorophenol laurate (PCPL) is used mostly in the impregnation of textiles and ropes. PCPL has low water solubility and low vapour pressure. PCPL will slowly be converted to PCP in its ionic form, which washes out of the textile or is lost by vaporization. Wood and leather products are impregnated mainly with the sodium salt of PCP (NaPCP), which will be washed out of the product over time. In both instances, this will result in emissions from the products into the environment.

No discharge has been registered of PCP into the environment in Norway in 2007. It has been impossible to obtain an overview of the quantities of PCP in various imported products, and it is therefore also impossible to estimate the extent of potential emissions into the environment.

### **3.3 Alternatives**

PCP is currently not used in Norwegian manufacturing. For impregnation of wood products, there are several satisfactory alternatives. Wood products that do not need impregnation can be used, or other impregnation agents or other surface treatment less hazardous to health and the environment can be used. It is also possible to use other materials such as steel (which can be recovered), fibreglass, cement/concrete which has a lifetime that is almost twice as long as PCP-processed wood. Furthermore, such materials do not need the level of maintenance as impregnated wood, and do not need to be processed as hazardous waste.

PCP is used in yarn and textiles to reduce mould and insects. There are alternative chemicals less hazardous to health and the environment, which have similar effects on mould and insects. Denmark has regulated PCP in products, which shows that it is possible to cover this need with alternative means.

## **4 Current Policy**

### **4.1 National Goals**

Norway has established national targets for eliminating or substantially reducing releases of priority hazardous substances by 2010 with a view to eliminating them by 2020 (Prop. 1 S (2009-2010) from the Norwegian Ministry of the Environment, Proposition to the Parliament (Storting) for the 2010 budget year):

- Releases of certain hazardous substances (cf. the Priority List) will be eliminated or substantially reduced by 2010.
- Releases and use of substances that pose a serious threat to health or the environment will be continuously reduced with a view to eliminating them within one generation (by the year 2020).

Thirty substances and substance groups have been prioritised and listed on the Priority List, which covers this objective. PCP is one of the substances included on the Priority List.

### **4.2 Existing Regulation**

Pentachlorophenol is banned in substances and mixtures at levels in excess of 0.1% by weight (section 2-10 of the Norwegian Regulations relating to restrictions on the manufacture, import, export, sale and use of chemicals and other products hazardous to health and the environment (Product Regulations), established by the Norwegian Ministry of the Environment), which implements EU/EEA regulation in Annex XVII in the EU regulatory framework REACH (formerly Directive 1999/51/EC). The regulatory measures in the EU do not cover imported, solid products. In Norway PCP is also regulated in leather and in textiles in quantities in excess of 5 ppm (section 3-4 of the same regulation). The Norwegian regulation does not cover other imported articles.



It is prohibited to use PCP as a biocide in Europe (Biocidal Product Directive, which implements the EU/EEA rules and regulations). The Biocidal Product Directive does not regulate imported articles.

The substance is regulated in Statutory Order of 26 October 1995 for production, import and offering, etc. of cosmetics and body care products (Cosmetics Order), Annex IIB (established by the Norwegian Ministry of Health and Social Affairs, now the Norwegian Ministry of Health and Care Services.)

### **4.3 Internationally**

Pentachlorophenol has received attention in several international forums for many years. PCP is listed on OSPAR's "List of Substances of Very High Concern." It has been proposed that PCP should be included in Annex I of the LRTAP Protocol on POPs. It is currently being considered whether PCP meets the requirements for inclusion in the LRTAP Protocol on POPs.

On 12 September 2009, Denmark issued a ban on the import, sale, use and export of goods containing PCP or salts and esters in concentrations of 5 ppm (mg/kg) (0.0005% by weight) or more.

## **5 Proposal for Regulation**

It is proposed that consumer products containing pentachlorophenol should be regulated in the following manner and that this regulation should be included in the Regulation 1 June 2004 No 922 relating to restrictions on the manufacture, import, export, sale and the use of chemicals and other products hazardous to health and the environment (Product Regulation):

*It is prohibited to produce, import, export and sell consumer products containing pentachlorophenol (CAS No 87-86-5) or its salts or esters, when the content of the substance in the product's homogenous individual components is greater than or equal to 0.0005% by weight (5 ppm). The prohibition shall not apply to textiles and leather regulated under section 3-4 of the Norwegian Regulations relating to restrictions on the manufacture, import, export, sale and use of chemicals and other products hazardous to health and the environment.*

*The prohibitions in the first paragraph shall not apply to food products, cosmetics, food packaging, fertiliser, tobacco, medicine, means of transport, permanently mounted equipment for means of transport, and tyres and similar accessories for means of transport. The prohibitions shall not apply to spare parts for consumer products made available for sale before [XX MONTH YEAR- date of entry into force].*

*Consumer products shall here refer to any product intended for consumers and which can reasonably be expected to be used by consumers, cf. the definition set out in section 2a of the Norwegian Act of 11 June 1976 No 79 Relating to the Control of Products and Consumer Services (Norwegian Product Control Act). Homogenous individual components shall here refer to a material that cannot be divided mechanically into various materials.*

*For consumer products, this section shall take precedence to other provisions in this regulation.*

The current regulation in section 3-4 in the Product Regulation covers bans on the production, import, export and sale of textiles and leather containing more than 5 ppm pentachlorophenol or its salts or esters. The limit value in the proposed regulation is in accordance with existing limit values for textiles and leather in the Product Regulation and the Danish regulations. It is also prohibited to produce, import, export, sell and use substances or mixtures containing pentachlorophenol (CAS No 87-86-5) or its salts or esters, at levels equal to or in excess of 0.1% by weight, see section 2-10 of the Product Regulation.

All use within the scope of application that does not fall under the exemptions will be covered by the regulation. It is proposed that the existing rules be maintained in their present form and that they not be changed through this regulation.

## **6 Assessment of Other Measures**

In Norway's assessment, the health and environmental effect that is sought with the proposal cannot be achieved with less restrictive measures. In the following, we evaluate alternative measures to the proposed regulation.

The proposal is motivated, among other things, by the consumer's lack of knowledge about; health and environmental problems linked to the use of products that may contain hazardous substances; how consumers need to protect themselves against potential exposure from the products; and how the products should be handled once they wind up as waste. One might ask whether these problems could be solved through information campaigns directed at consumers. Based on OECD studies and other research, experience shows that information campaigns are insufficient to reduce emissions of priority hazardous substances. The measure is too diffuse and uncertain to reach the necessary goals. Information campaigns are therefore not a relevant alternative to the proposed regulation.

From Norway's perspective, a corresponding health and environmental effect cannot be achieved using economic measures, such as a tax. A tax is most appropriate in cases where the only aim is to reduce the use of the substance and in cases where there is no urgent need to reduce the emissions. In light of the health and environmental hazardous properties of PCP, it is important that we have a reduction in use and emissions that is as rapid as possible. This means that a tax is not a desirable measure. Economic measures have generally turned out to be less effective than usage and sales restrictions to achieve reductions in emission. It would also be very difficult to establish a tax system that could produce the same effect as the proposed regulation.

It is also insufficient to introduce measures at a later stage in the sales chain. Collection schemes would, for example, be less restrictive on trade than a prohibition but would not lead to the same health and environmental impact. Regulation at the source of emission is the most effective regulation method when the objective is to achieve rapid reductions in emissions. If measures are introduced at a later stage, once the products have been put on the market, it is more difficult to introduce measures that effectively prevent uncontrolled dispersion of hazardous substances. Furthermore, the risk of leaks and emissions would be greater once the reducing measures are introduced after the products have entered the market. It would be more effective to regulate near the source. Many consumers lack the relevant knowledge about collection schemes. It is difficult enough to monitor whether consumers are using already existing collection schemes.

Additionally, restrictions are a far more effective measure than labelling of products containing PCP. It is unlikely that labelling in and of itself will reduce the risk of dispersion or exposure of PCP.

Voluntary agreements between the authorities and the industry have been effective measures in other environmental areas, among other things, in order to ensure proper waste handling. In this instance, however, where the purpose is to achieve a rapid reduction in emissions, voluntary agreements are a far less certain measure than the introduction of restrictions. Furthermore, PCP is mainly found in imported products. These are difficult to capture with voluntary agreements. The proposed restrictions will therefore be a more effective measure to achieve the desired result.

## **7 Impact Assessment**

### **7.1 Benefits**

The main purpose of the proposal calling for expanded regulatory control of PCP is to reach the national goal of eliminating or substantially reducing emissions of priority hazardous substances by 2010 with a view to eliminating them by 2020, as well as preventing a serious hazardous substance such as PCP from occurring in consumer products. Existing regulations of PCP do not cover imported articles sufficiently. Our regulatory proposal will fill this gap in the existing regulations. Imported products with PCP are the most important remaining source of potential discharge and exposure to PCP.

The most important application for pentachlorophenol subject to regulation will be impregnated wood products. Usage over time might result in PCP being washed out and thereby being discharged into the environment. The proposal will reduce this potential for emissions into the environment and reduce the risk of health effects through use. Additionally, the proposal will contribute to reducing the potential for forming and emitting dioxins, furans and hexachlorobenzene from products treated with PCP. It is impossible to avoid emission of dioxin, furans and hexachlorobenzene from PCP-treated products unless the use of PCP is banned.

The regulation will also contribute to avoiding potential future use in products. Most manufacturers have already found alternatives to pentachlorophenol for the most important usage area—impregnated wood products. It is also possible to use other materials such as steel (which can be recovered), fibreglass, cement/concrete which has a lifetime that is almost twice as long as PCP-processed wood. Such materials do not need the level of maintenance as impregnated wood, and do not need to be processed as hazardous waste. Manufacturers of the alternatives will benefit from the regulatory proposal.

### **7.2 Costs**

We have been unable to calculate the costs related to the proposal. PCP as a substance and mixture is strictly regulated in Norway and the EU; additionally, the Danish government has already implemented a regulation corresponding to the one we are proposing. There are satisfactory alternatives for the most important application—impregnated wood products which constitutes more than 75% of the estimated use.

It is generally assumed that the transition to alternative substances will make products somewhat more expensive. This is a result of the costs involved in research and development of alternatives that are equally good, and the restructuring of manufacturing processes. We believe that the measure will not result in significant socioeconomic costs.

### **7.3 Summary and Conclusion**

PCP is a priority hazardous substance, and national goals have been established for phasing it out. Documentation shows that PCP has serious effects on health and the environment, and it has been detected in the environment. PCP is already strictly regulated in Norway, which has resulted in the small emissions of PCP we see today. However, PCP is introduced to the Norwegian market via imported products. Imported products treated with PCP are the largest remaining source of emissions. Products with PCP also contribute to emissions of dioxins and furans, which have serious effects on health and the environment. The proposed regulation will fill this gap in the current regulation of PCP. The government also wishes to prevent any future use in products.

The regulatory proposal may result in some increased costs but will simultaneously result in a reduction in the introduction of PCP into the environment and reduce the risk of health and environmental effects. In relation to the health and environmental effects of PCP, and because there are satisfactory alternatives involving less risk to human health and the environment, we believe the increased costs to be acceptable. The proposal will provide for the identical regulation of products produced inside and outside the European Economic Area. The proposed regulation will have positive effects for companies producing alternatives and it will contribute to avoiding any future use in products. The measure is not assessed to involve significant socioeconomic costs, and we are anticipating that the benefits will outweigh the costs on the basis of the expected positive effects the proposal will have for health and the environment. Products containing less than the established limit value of 5 ppm may be sold legally. The proposal provides exemptions for usages that are already regulated.

Denmark regulates products containing 5 ppm or more PCP. This regulation covers the same articles as our proposed regulation and shows that there are satisfactory alternatives to the relevant products.

It is unacceptable for a serious hazardous substance as PCP to be present in consumer products. Consumer products are an important source of uncontrolled dispersion of hazardous substances into the environment. It is therefore critically important that the use of products with such hazardous substances should be limited. Consumer products are particularly important, since consumers lack the requisite knowledge about the health-related and environmental problems associated with their use and the waste disposal of these substances.

From the Norwegian Government's point of view, there is no secondary legislation (EU/EEA regulations or directives) preventing a national regulation of PCP in consumer products. Neither the rules set out in the EEA Agreement's main part nor the case law of the EU Court are considered hindrances to the regulatory proposal. We refer here to what has been stated about the special health and environmentally hazardous properties of the substance as well as the special risk PCP constitutes to health and the environment when it occurs in consumer products. The proposed regulation is considered to be based on legitimate health and environmental concerns and is considered an appropriate and necessary measure to reach the objective of reduced emissions of PCP from consumer products. The measure goes no further

than necessary to achieve the objectives we seek to achieve, *cf.* the impact assessment and previous statements relating to the proportionality of the measure.

## 8 References

- Proposition 1 S (2009-2010) from the Norwegian Ministry of the Environment. Storting Proposition (Storting Bill) for the 2010 Budget Year.
- Dossier prepared in support of a proposal of pentachlorophenol to be considered as a candidate for inclusion in the Annex I to the Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (LRTAP Protocol on POPs), Warsaw, May 2008, prepared by *Mieczysław Borysiewicz*.
- Sandau C.D et al, Pentachlorophenol and hydroxylated polychlorinated biphenyl metabolites in umbilical cord plasma of neonates from coastal population Quebec, *Environmental Health Perspective*, (2002).
- Sjødin A. et al., Influence of the consumption of fatty Baltic Sea fish on plasma levels of halogenated environmental contaminants in Latvian and Swedish men, *Environmental Health Perspective*, (2000).
- Danish EPA, Survey of dioxin in Denmark.
- EU's Priority List of Substances to be Studied Further for endocrine disrupting properties; EU Strategy for Endocrine Disrupting Substances.