



Product Environmental Management

Dear Sir or Madam,

Please read the following information about Product Environmental Management carefully:

Restricted Chemical Substances Management

In reaction to progressively stricter international environmental protection restrictions on the use of chemical products and in an attempt to enhance controls in the use of various chemicals in the manufacturing of products, especially those deemed as hazardous, Acer is offering systematic management controls to ensure each supplier is able to meet requirements. Acer is strongly committed to the protection of human health and the conservation of the environment. Hence, Acer upholds a cautious attitude regarding the use of chemical substances in its products, As to uphold the spirit of the precautionary principle, we abide by all regulatory standards concerning particular chemical substances and demand our suppliers to follow the "Guidance of Restricted Substances in Products" established by Acer on application on the limited or gradually banned hazardous chemical substances.

Acer defines a "hazardous chemical substance" as one that is persistent, bio-accumulative, toxic, carcinogenic, or mutagenic, reproduces toxicity or causes environmental hormone disruption.

Precautionary Principle

We adopt the principle of early prevention, assessing all potential hazards and chemical substances that may impact the environment.

- Acer strictly forbids continued use of substances that have been confirmed by authorized appraisal agencies to cause irreversible damage to the ecosystem or human health.
- If current scientific technology is unable to confirm certain substances to cause irreversible effects, Acer proactively assesses whether it should continue using such substances.
- If there is a suitable and safe substitute substance available, Acer will opt to use the substitute. Before such a suitable and safe material is available, Acer will actively strive to research and develop suitable and safe substitutes.
- In the case of a dispute, Acer takes responsibility by proactively gathering and providing related proof

Response to the European Union RoHS Directive

Since the European Union's (EU) promulgation of the RoHS Directive, Acer has established a Global Environmental Safety Team to focus on related concerns. The primary tasks of this organization are to stay abreast of related regulations and information in each EU nation, and to establish an Environmental Safety Team at Acer's Taiwan headquarters. This team is responsible for providing guidance,



inventorying raw materials used in manufacture, switching to alternative materials, and verifying their effectiveness for each product line and each supplier of principal components. After a year of devoted efforts, on 1 July 2006 all of Acer's products have been RoHS compliant.

Our Response to REACH

REACH (which stands for Registration, Evaluation, Authorisation, and Restriction of Chemicals) is the name for the European Union's recent chemicals policy, contained in Regulation (EC) 1907/2006 which entered into force on June 1, 2007 (REACH Regulation). REACH places greater responsibility on industry to manage the risks that chemicals may pose to human health and the environment. Under the regulation, certain chemical substances, either by themselves, in compositions or in articles may not be manufactured or placed on the market within the European Union unless they have been registered in accordance with the relevant provisions where this is required. The REACH Regulation is based on the principle that it is for manufacturers, importers and downstream users to ensure that they manufacture, place on the market or, respectively, use such substances that do not adversely affect human health or the environment. Its provisions are underpinned by the precautionary principle which is consistent with Acer's concept for chemical substances management.

• Registration

Per paragraph 1 of article 7 of the regulation, any producer or importer of articles shall submit a registration to the European Chemicals Agency ("ECHA or Agency") for any substance contained in those articles, if both the following conditions are met:

- the substance is present in those articles in quantities totaling over 1 ton per producer or importer per year;
- the substance is intended to be released under normal or reasonably foreseeable conditions of use.

Through preliminary assessment and expert consultation it has been determined that our products do not release the substances under normal or reasonably foreseeable conditions of use. Therefore, Acer will not submit a registration to ECHA.

• Notifications

Per paragraph 2 of article 7 of the regulation, any producer or importer of articles shall notify the Agency, in accordance with paragraph 4 of this Article, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1), if both the following conditions are met:

- the substance is present in those articles in quantities totaling over 1 ton per producer or importer per year;
- the substance is present in those articles above a concentration of 0,1 % weight by weight (w/w).

On October 28, 2008, ECHA listed 15 substances in [the Candidate List of Substances of Very High Concern for authorisation](#). Substances that are



included in the Candidate List have been identified as Substances of Very High Concern (SVHC). These substances may have very serious and often irreversible effects on human health and the environment. Substances on the Candidate List may subsequently become subject to authorization by decision of the European Commission.

Once substances are included in the "Authorisation List," Acer will view them as restricted substances from such moment on and request suppliers to analyze the availability of alternatives and consider their risks, and the technical and economic feasibility of their substitution.

Based on Acer's proactive attitude for environmental protection, Acer manages hazardous substances beyond RoHS compliance and develops HSF management schemes following the precautionary principle. To fulfill such principle, we conduct a full inventory together with suppliers for the most accurate information. And we will summarize and publish the result of our inventory by the first quarter of 2009.

• **Obligations linked to the Candidate List of SVHC** (for articles)

• **From the date of inclusion:**

EU or EEA suppliers of articles which contain substances on the Candidate List in a concentration above 0.1% (w/w) have to provide sufficient information, available to them, to their customers or upon request, to a consumer within 45 days of the receipt of the request. This information must ensure safe use of the article and as a minimum contain the name of the substance.

• **From 2011:**

EU and EEA producers or importers of articles have to notify ECHA if their article contains a substance on the Candidate List. This obligation applies if the substance is present above 0.1% (w/w) and its quantities in the produced/imported articles are above 1 ton in total per year per company.

- For substances included in the Candidate List before December 1, 2010, the notifications have to be submitted not later than June 1, 2011.

- For substances included in the Candidate List on or after December 1, 2010, the notifications have to be submitted no later than 6 months after the inclusion.

Note: A notification is not required when

1. the producer or importer of an article can exclude exposure of humans and the environment during the use and disposal of the article. In such cases, the producer or importer shall however supply appropriate instructions to the recipient of the article.
2. the substance has already been registered for that use up the same supply chain or any other supply chain.

For more information about REACH, please visit http://echa.europa.eu/reach_en.asp

Supply Chain Management

Acer's management of suppliers' use of hazardous chemical substances can essentially be divided into three systems: Environmental Standard Requirements, Qualified Product Assurance (QPA) and Compliance Assurance System (CAS). This



dual stage management framework guarantees product quality and ensures the restricted use or elimination of hazardous chemical substances.

Environmental Standard Requirements

Acer environmental standard requirements include: Eco-product requirements, Guidance of Restricted Substances in Products and a Green BOM list. Acer provides these three documents to suppliers and requests compliance with related standards.

- **Eco Product Requirement**

All of Acer's suppliers should meet the requirements put forward by Acer. The requirement covers aspects such as energy saving, easy recycling, low toxicity, battery usage, materials labeling, and packaging materials. Additionally, suppliers must provide Acer with related product environmental data, which will be regularly compiled and issued by Acer.

- **Guidance of Restricted Substances in Products**

- In order to better comply with stricter international environmental regulations regarding the use of chemical products and to more conscientiously control the use of chemical materials in the manufacture of company products, Acer compiled a new "Guidance of Restricted Substances in Products" at the end of 2006. The guidance divides chemical materials into three categories: prohibited materials, current restricted materials and future restricted materials. Future restricted materials are further divided into two more categories: those having an established schedule for restricted use and those currently under evaluation for restricted use. Materials under evaluation for future restricted use are handled based on prevention principles. They are placed on a future restricted material list for review from which a schedule is then drawn up for phasing out their use. The execution of the schedule then proceeds with verification, technological analysis and substitute material testing according to the HSF plan. Testing is conducted to determine whether any substitute technology will influence the quality, safety and reliability of finished products as well as to determine any possible adverse affects on human health or the environment.

1. Having an established schedule for restricted use: BFRs, PVC, Phthalates.
2. Currently under evaluation for restricted use: Antimony, Arsenic, Beryllium, Bismuth, Selenium.

- **Green BOM**

All suppliers are expected to conduct product chemical material use inspections based on this model. The scope of these inspections include article 5.1 of the guidance concerning 'prohibited materials' and article 5.2 concerning 'currently restricted materials.' The results of the inspections should be recorded on the Green BOM, showing the ratio of hazardous chemical material contained in each part before submitting the list to Acer. Submitting the Green BOM list is a preliminary step to determine whether suppliers are carrying out the stipulations in the "Guidance of Restricted Substances in Products."

Qualified Product Assurance (QPA)



It is to ensure that primary component suppliers have the capacity to provide equivalent quality products based on Acer's new environmental protection standards. Currently, all of Acer's suppliers and major component suppliers have completed this first phase of assurance and are already supplying products that comply with Acer's environmental protection standards.

Compliance Assurance System (CAS)

After implementing the product Qualified Product Assurance (QPA) phase, Acer then focuses on the CAS of its suppliers, because we believe that suppliers can effectively minimize risks with a quality management system. There are two levels in this managerial approach:

- **Product Testing and Sampling**

Each supplier must submit an appropriate product test report in order to demonstrate compliance with the "Guidance of Restricted Substances in Products." Additionally, we carry out sampling test plan on any dubious product in order to ensure Acer products adhere to our pledge to meet environmental protection standards.

- **Onsite Audits**

The scope of these audits includes both system and manufacturing. System audits comprise execution conditions and results. Our suppliers' management systems and inspection of the manufacturing processes continuously ensure that production complies with Acer's environmental protection standards quantity and quality requirements. Acer has a regular inspection plan with suppliers in order to enhance evaluations for the suitability of chemical component use in products. This plan seeks to weed out any chemical components that do not meet standards listed in the Guidance of Restricted Substances in Products or any future environmentally problematic materials. Acer hopes that this plan will help reduce the volume of chemically hazardous materials being used in the future.

Hazardous Substance Free Plan (HSF Plan)

Acer's prevention principles behoove us to assess any potentially hazardous or chemical substance that may have a negative impact on the environment. Thus, Acer is committed to eliminating the use of hazardous chemical substances listed in OSPAR Plus. At the present stage, PVC and BFRs are priority hazardous chemical substances chosen for gradual elimination. Acer pledges to prohibit PVC and BFRs from use in all new Acer products by 2009. For a detailed description of this plan, please click here to see our [HSF Plan](#).

In light of the precautionary principle and international trends for sustained development, Acer has officially banned the use of deca-BDE and PFOS in all its products, parts and components. In addition, Acer is planning to ban the use of all phthalates, beryllium (and its compounds) and antimony (and its compounds) for new Acer products by 2012. Please refer to Guidance Of Restricted Substances In Products for more details.

Acer's Restricted Hazardous Substance List

1. **Banned substances:** use of the listed substances is strictly prohibited, in any part of the products such as packaging.

Unit: mg/kg = ppm

Substances	CAS Numbers	Description	Legal Reference
Hexachlorocyclohexane (HCH) isomers	58-89-9 608-73-1	All products and parts	• OSPAR
Polychlorinated biphenyls (PCBs)	1336-36-3	All products and parts	• 76/769/EEC • OSPAR
Polychlorinated terphenyls (PCTs)	26140-60-3	All products and parts	• 76/769/EEC
Asbestos	1332-21-4	All products and parts	• 76/769/EEC • 1999/77/EC
Short Chain Chlorinated Paraffins (C10-C13, SCCP)	85535-84-8	All products and parts	• 76/769/EEC • 2002/45/EC • - OSPAR
Polychlorinated naphthalenes (Cl>3, PCNs)	70776-03-3	All products and parts	• The Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances (Japan) • OSPAR
Organic tin compounds (Tributyl Tin (TBT) ; Triphenyl Tin (TPT))	56-35-9 1803-12-9 379-52-2	All products and parts	• The Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances (Japan) • OSPAR
Azo compounds	-	All products and parts	• 76/769/EEC • 2006/61/EC
Polychlorinated dibenzodioxins (PCDDs)	1746-01-6	All products and parts	• OSPAR
Polychlorinated dibenzofurans (PCDFs)	136677-10-6	All products and parts	• OSPAR

Pentachlorophenol (PCP)	87-86-5	All products and parts	• OSPAR
Nonylphenol/ethoxylates (NP/NPEs) and related substances	-	All products and parts	• OSPAR
Polyaromatic hydrocarbons (PAHs)	65996-93-2	All products and parts	• OSPAR
Alkylphenols	EDF-149	All products and parts	• OSPAR
Ozone Depleting Substances based on Montreal Protocol (Include CFCs, Halons, carbon tetrachloride, 1,1,1-trichloroethane, HCFCs, HBFCs, bromochloromethane, methyl bromide)	56-23-5 71-55-6 74-97-5 74-83-9 etc.	All products and parts	• Montreal Protocol

2. Restricted substances: According to current company policy, the content of these substances shall not exceed the legal limit.

Unit: mg/kg = ppm

Substances	CAS Numbers	Threshold Limit (ppm)	Description	Legal Reference
Lead (Pb)	7439-92-1	300	External cable	• California Proposition 65
		1,000	All products and parts	• 2002/95/EC • 2005/618/EC • OSPAR
Cadmium (Cd)	7440-43-9	100	All products and parts	• 76/769/EEC • 91/338/EEC • 2002/95/EC • Cadmium Decree (Dutch) • 2005/618/EC • OSPAR
Mercury (Hg)	7439-97-6	1,000	All products and parts	• 2002/95/EC • 2005/618/EC • OSPAR
Hexavalent chromium (Cr6 +)	18540-29-9	1,000	All products and parts	• 76/769/EEC • 2002/95/EC

				• 2005/618/EC
Nickel (Ni)	7440-02-0	Release Rate 0.5 ug/cm ² /week	Casing on handheld product	• 76/769/EEC • 94/27/EC
Polybrominated biphenyls (PBBs)	2052-07-05 2113-57-7 92-66-0 13654-09-06 92-86-4 59080-40-9 36355-01-8 67774-32-7 27753-52-2 61288-13-9 56307-79-0 59536-65-1 40088-45-7 51202-79-0 etc.	1,000	All products and parts	• 2002/95/EC • 2005/618/EC
Polybrominated diphenyl ethers (PBDEs), including deca-BDE	101-55-3 1163-19-5 2050-47-7 68928-80-3 36483-60-0 63936-56-1 32536-52-0 32534-81-9 40088-47-9 49690-94-0 etc.	1,000	All products and parts	• 2002/95/EC • 2005/618/EC
Brominated Flame Retardants (BFRs)	—	1,000	All products casing	Acer Restricted
Perfluoro-octane sulfonates (PFOS)	1763-23-1	1,000	All products and parts	2006/122/EC

3. Restricted substances in future: The regulated substances in all future products shall confine within legal limits.

Based on Acer's preventive principles, aside from currently banned or limited materials, there are still many chemical substances in use whose affects on the environment are still unknown. Along these lines, Acer will continue to adhere to international controls on use of hazardous chemical substances. These include agreements such as the fifteen-nation Oslo-Paris Commission (OSPAR), the Stockholm Convention on Persistent Organic Pollutants (POPs), the European Union Registration, Evaluation and Authorization of Chemicals (REACH), the United States



Environmental Protection Agency's Electronic Product Environmental Assessment Tool (EPEAT) and the Joint Industry Guide (JIG).

Moreover, Acer will continue to contact with major environmental groups that are concerned about the use of hazardous chemical substances in business. These include Greenpeace, the U.S. Silicon Valley Toxics Coalition (SVTC) as well as other such organizations and businesses that deal with the handling of discarded high-tech information products. These organizations offer the latest information on hazardous chemicals that can help Acer ascertain what substances should have restricted use in the future. The screening principles Acer will adhere to in restricting the use of chemical substances include:

- Substances shown to adversely affect the environment, user health or safety
- Substances possibly requiring hazardous waste management measures
- Substances for which the process of handling its discarded products has a severely negative affect on the environment
- Substances confirmed to have been used in an information technology product

Initial selection of substances for restricted use in the future will be based on the following evaluation points:

- Technical feasibility
- The affect the restricted use or banned substance has on product quality and safety
- Any negative affect substitute technology would have on the environment

Moreover, in coordination with suppliers, Acer will conduct tests on substitute materials and when it is determined that any substitute technology will neither affect product quality, safety, reliability nor harm user health or increase environmental burden, then a clear timetable will be established for the phasing out restricted use or banned substances. Acer is committed to working with all involved in progressively urging suppliers to implement the use of more environmentally-friendly substitute technologies in products so as to reach the objective of phasing out restricted use and banned substances.

In the present stage, Acer has already adopted a limited timetable for future limited use substances such as brominated flame retardants (BRFs), polyvinyl chloride (PVC), phthalates, antimony and beryllium. In accordance with Greenpeace suggestions, we are also adopting screening principles and focal assessments in researching and testing substitute substances with suppliers. We are also setting clear timetables to phase out restricted use and banned substances. Substances currently under assessment for future restricted use include, arsenic, bismuth and selenium. As these substances adhere to the above-mentioned screening principles, we will follow up by including them on the list of items requiring further evaluation to determine the feasibility of restricting or banning their use.

Unit: mg/kg = ppm

Substances	CAS Numbers	Threshold Limit (ppm)	Description	Legal Reference
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Brominated Flame Retardant Groups, BFRs	25637-99-4 79-94-7 etc.	1,000	All products and parts	By 2009
PVC (Polyvinyl chloride)	9002-86-2	1,000	All products and parts	By 2009
Certain Phthalates (Including DEHP, DBP, BBP, DINP, DIDP and DNOP)	117-81-7 84-74-2 85-68-7 28553-12-0 26761-40-0 117-84-0	1,000	All products and parts	By 2009
All Phthalates (other than DEHP, DBP, BBP, DINP, DIDP or DNOP)	—	1,000	All products and parts	By 2012
Beryllium and its compounds	7440-41-7 12770-50-2 7787-47-5 7787-49-7 13327-32-7 1304-56-9 13598-15-7 13510-49-1 7787-56-6 1302-52-9 11133-98-5 etc.	1,000	All products and parts	By 2012
Antimony and its compounds	7440-36-0 1309-64-4 1314-60-9 10025-91-9 15432-85-6 etc.	1,000	All products and parts	By 2012
Arsenic and its compounds	7440-38-2 ARF750	1,000	All products and parts	Evaluating
Bismuth and its compounds	7440-69-9	1,000	All products and parts	Evaluating
Selenium and its compounds	7782-49-2 SBP500	1,000	All products and parts	Evaluating