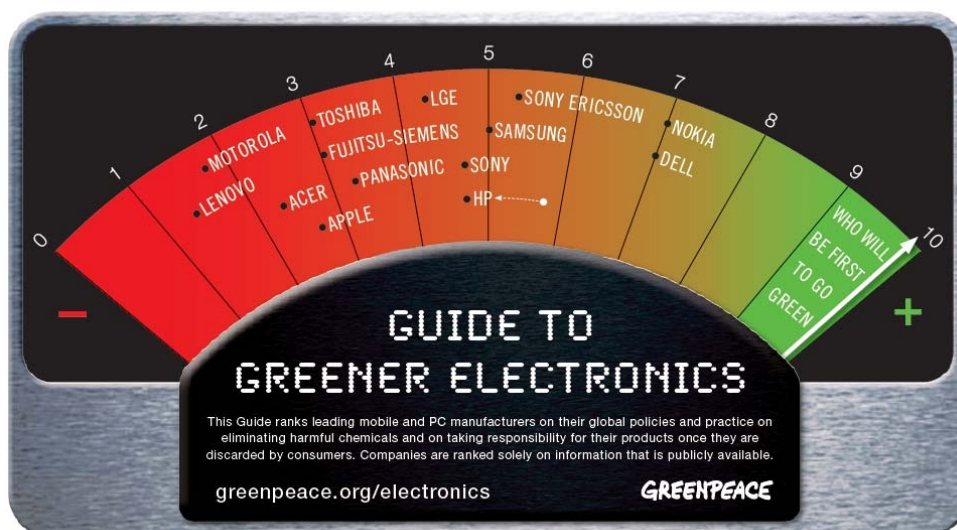


# The Evolution of the *Guide to Greener Electronics* Achievements of the Green Electronics Campaign

Greenpeace began the Green Electronics campaign with two simple demands; **clean up** the hazardous waste stream by eliminating toxic chemicals and **take back** and recycle obsolete products. By cleaning up all electronic product lines by eliminating the most toxic chemicals, a manufacturer can guarantee its products' lifecycles are not exposing workers and the environment to hazardous substances. In addition, it is imperative that all manufacturers take back and recycle their own obsolete products. These two issues were coupled in the *Guide to Greener Electronics* because the continued use of harmful chemicals prevents the safe handling and responsible recycling of electronic products.

Due to the highly competitive nature of this industry, we knew that the most effective approach would be to rank the companies against each other on these two important issues. The *Guide to Greener Electronics* was launched in August 2006 and quickly became the most effective tool in the campaign. The first edition of the Guide to Greener Electronics ranked fourteen companies: Acer, Apple, Dell, Fujitsu-Siemens, Hewlett-Packard, Lenovo, LGE, Panasonic, Nokia, Motorola, Samsung, Sony, Sony Ericsson and Toshiba. These manufacturers were scored on nine criteria under the two overall issues; chemicals and e-waste. They were then ranked against each other on a scale from 0 to 10, with 10 representing the most progressive policies, practices and products on the market. The *Guide to Greener Electronics* has continued to be released quarterly or bi-annually since its original launch.



The first *Guide to Greener Electronics*, August 2006

## *Guide to Greener Electronics* criteria:

### Eliminating hazardous substances

Greenpeace demands that all companies across the industry sector adhere to the precautionary principle in their chemicals management policies. The precautionary principle states that companies must take action to substitute and/or eliminate a suspect chemical or group of chemicals, even if the scientific jury is still out on whether these chemicals are definitely causing environmental harm.

Implementing a precautionary chemicals policy requires a system for collecting information on new suspect chemicals and mechanisms for triggering corporate action to phase out the chemical and begin looking for safer substitutes.

Company brands have power over the industry's supply chain, with the result that components and products can be developed that minimise harm to workers and the environment. The Chemicals Management criterion encourages companies to wield this power. Effective company policies ensure that suppliers do not continue to use substances that are banned or restricted. In order to achieve full points for Chemicals Management, companies must define the systems in place to implement the phase out of harmful substances (like PVC, BFRs), effectively putting themselves in the appropriate position to meet their commitments, as well as show that they have systems for identifying future hazardous substances of concern.

The other criteria rewarded commitments made to phase out the use of PVC vinyl plastic and brominated flame retardants (BFRs) with a timeline. Companies also scored double points for products on the market that are free from these hazardous substances.

The campaign focused on PVC plastic and BFRs as two substances that must be removed from all electronic products as a priority. These two chemicals are widely used across the industry, but can cause damage to the environment and human health throughout their entire lifecycle. However, alternatives are available for most applications, so the use of PVC and BFRs is not necessary and many electronics manufacturers have designed these substances out of their products.

### **PVC**

Polyvinyl chloride (PVC) is a relatively cheap and widely used chlorinated plastic. It is naturally rigid and in this form is used in many ways, including by the building industry. Through the addition of various chemical additives, including plasticisers such as phthalates, to make it flexible and soft, PVC can be used in a diversity of applications. It is in its flexible (plasticised) form that it is most often used by the electronics industry, mainly as an insulator and coating for electrical cables.

Its manufacture involves the use of hazardous raw materials, including the basic building block of the plastic, vinyl chloride monomer (VCM) which is explosive, highly toxic and carcinogenic. PVC production facilities have a long history of generating complex and hazardous chlorinated wastes, some of which are inevitably released into the surrounding environment.

When it enters the waste stream, PVC presents further problems as a result of both its chlorine content and its additives. For example, when PVC is burned for disposal (e.g. incineration, uncontrolled burning) or, in the case of electrical cables, to recover valuable copper wire, its high chlorine content can contribute to the formation of highly toxic and persistent chlorinated dioxins. In landfills, some of the chemical additives contained in PVC may leach out, adding to the overall contaminant burden of landfill leachate.

### **BFRs**

The term brominated flame retardants (BFRs) refers to a wide range of brominated chemicals added to materials to both inhibit their ignition and slow their rate of combustion. Several BFRs, including certain PBDEs and HBCD, have known toxic properties, are highly resistant to degradation in the environment and are able to bioaccumulate (build up in animals and humans). Some are now widespread environmental pollutants, with higher levels generally being found in the atmosphere and rivers close to urban and industrialised areas.

During high temperature processes used in some recycling or disposal operations the chemical structures of BFRs can be partially or completely destroyed, creating free reactive forms of bromine which can recombine with other elements in the waste gases to form other highly toxic, persistent and bioaccumulative by-products, including brominated dioxins.

Alternatives which provide the degree of fire safety required under law without using organic compounds of bromine or chlorine do already exist, including some direct chemical substitutes; the use of alternative materials and even product redesign can reduce or eliminate the need for flame-retardant additives.

## **Take-back and recycling**

Greenpeace expects companies to take financial responsibility for dealing with the e-waste generated by their products, to take back discarded products in all countries where their products are sold and to re-use or recycle them responsibly. This policy is called Individual Producer Responsibility (IPR).

Companies need to support and lobby for IPR legislation to be implemented and show positive action in getting their own-branded products back for re-use and recycling. Because of the end-of-life costs of treating discarded electronic products, especially when they contain hazardous substances, IPR provides a feedback loop to the product designers and thus an incentive to design out those costs, for example, by eliminating hazardous substances. Companies who show leadership in designing more innovative and greener products are therefore rewarded by lower end-of-life costs.

The e-waste criteria score companies on their commitment to Individual Producer Responsibility, their practice on voluntary take-back of their obsolete products, (in countries without legislation), the information provided to customers about their take-back programmes and their reporting of the quantities recycled.

## **Creating a stronger *Guide to Greener Electronics***

In the 8<sup>th</sup> edition of the *Guide to Greener Electronics*, Greenpeace expanded the criteria to include additional hazardous substances and a new e-waste requirement on the use of recycled plastics in products. Given the urgency and global reach of climate change, a new section on Climate and Energy was added to evaluate companies' impact on climate change.

The new criterion on additional hazardous substances required companies to commit to phase out phthalates, antimony and compounds and beryllium and compounds, in addition to PVC and BFRs. Some antimony compounds are known to be toxic. Beryllium dust generated during electronic scrap shredding has the potential to harm recycling workers. Certain phthalates are already restricted in certain products, such as children's toys, due to their toxicity. Companies were now required to specify a timeline for the phase out of these toxic substances from their product lines.

In addition to the Chemicals Management criteria, an additional e-waste criterion was added. The new e-waste criterion requires the company brands to report on the use of recycled plastic content across all products and provide timelines for increasing content.

The new Climate & Energy section has five criteria which address key expectations that Greenpeace has of responsible companies that are serious about tackling climate change. They are: (1) support for global mandatory reduction of greenhouse gas (GHG) emissions; (2) disclosure of the company's own (GHG) emissions plus emissions from two stages of the supply chain; (3) commitment to reduce the company's own GHG emissions with timelines; (4) amount of renewable energy used and (5) energy efficiency of new models (double points).

Following is an example of how each criterion is scored.

## NOKIA Overall Score

	BAD (0)	PARTIALLY BAD (1+)	PARTIALLY GOOD (2+)	GOOD (3+)
Precautionary Principle				
Chemicals Management				
Timeline for PVC & BFR phaseout				
Timeline for additional substances phaseout				
PVC-free and/or BFR-free models (companies score double on this criterion)				
Individual producer responsibility				
Voluntary take-back				
Information to individual customers				
Amounts recycled				
Use of recycled plastic content				
Global GHG emissions reduction support				
Carbon Footprint disclosure				
Own GHG emissions reduction commitment				
Amounts of renewable energy used				
Energy efficiency of new models				

Nokia's overall scores in the 8<sup>th</sup> Edition of the *Guide to Greener Electronics*, June 2008

**Fuller FAQ on PVC and BFRs:**

[www.greenpeace.org/international/en/campaigns/toxics/electronics/the-e-waste-problem/what-s-in-electronic-devices/bfr-pvc-toxic/](http://www.greenpeace.org/international/en/campaigns/toxics/electronics/the-e-waste-problem/what-s-in-electronic-devices/bfr-pvc-toxic/)

**Ranking Criteria Explained:**

[www.greenpeace.org/international/campaigns/toxics/electronics/how-the-companies-line-up/](http://www.greenpeace.org/international/campaigns/toxics/electronics/how-the-companies-line-up/)

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