



July 6, 2010

The Secretary,
Ministry of Environment and Forests,
Paryavaran Bhawan,
Central Government Offices Complex,
Lodhi Road,
New Delhi-110003

Re: Proposal Contained in the Draft Notification of E-waste (Management and Handling)
Rules 2010

Dear Mr. Bhawan:

IPC – Association Connecting Electronics Industries submits the following comments to the Government of India Ministry of Environment and Forests regarding the proposal contained in the draft notification of E-waste (Management and Handling) Rules 2010. IPC is concerned with Chapter V of the Ministry's proposal titled *Reduction in the use of hazardous substances (RoHS) in the manufacture of electrical and electronic equipment* because it will have a significant negative impact on the global and Indian electronics industry and will fail to accomplish the Ministry's goal of environmentally sound management of electrical and electronic equipment waste. Restricting a broad list of substances from electronic products will not contribute to the environmentally sound disposal of electronic products. A scientific evaluation of substances for restriction must be conducted in order to ensure the alternatives provide a benefit to human health and the environment and achieve the Ministry's goal. Finding suitable alternatives that provide the same functionality and reliability as the substances identified for restriction simultaneously is unfeasible and technically challenging due to the complexity of electronic products. IPC urges the Ministry to implement a scientifically-based methodology for restricting substances that includes a full life cycle assessment of the substances and possible alternatives.

IPC is an international trade association for the electronic interconnect industry and represents over 2,700 member companies, several of which are located in India. IPC members are strong supporters of the environment and the important role of the electronics industry in promoting sustainable manufacturing. IPC members manufacture printed boards and electronics assemblies, the foundation of the world's consumer electronics, high technology products and industrial electronics, including defense, transportation and telecommunications systems. IPC maintains offices in Bannockburn (headquarters), Taos, Arlington, and Garden Grove, USA; Stockholm, Sweden; Moscow, Russia; and Shanghai and Shenzhen, China.

Restricting the twenty substances identified in Chapter 5, Schedule III of the proposed draft regulation simultaneously is impractical and unfeasible as electronic manufacturers will not be

able to ensure the alternatives provide the same level of functionality and reliability. Elimination of specific substances requires a great deal of research and development of alternative substances, requiring the investment of time and resources by electronics manufacturers throughout the supply chain. Similarly, implementing and enforcing regulations requires significant investment by authorities. The decision to prohibit a substance should not be undertaken lightly. Commitment of scarce societal resources should instead be guided by the best available science. Otherwise resources will be wasted and the environment and human health will suffer as resources are squandered pursuing goals that do not provide an environmental or health improvement over the status quo. It is essential that any substance restrictions under the Ministry's proposal be supported by strong scientific evidence in order to accomplish the goal of maximum human health and environmental protection.

The restriction of substances can result in unintended consequences, leading to a net effect of no increased environmental benefit or even worse, an outcome that harms the environment and human health. For example, the European Union did not study the alternatives when they restricted the use of lead in electronics under the RoHS Directive. A study¹ of lead-free solder by the U.S. EPA, which evaluated the environmental impacts of tin-lead solder versus lead-free alternative solders, found that the increased energy use associated with the higher operating temperatures required for manufacturing lead-free soldered electronics would cause higher air pollution, acid rain, stream eutrophication and global warming impacts than tin-lead soldered electronics. EPA's study serves as an important reminder that there are environmental trade-offs when substituting one substance for another. Before the Ministry restricts any substances there should be strong scientific evidence that potential substitutes are better for the environment and human health on a lifecycle basis.

The list of substances in Chapter V, Schedule III is extremely broad, arbitrary and lacks a clear scientific basis. It is extremely important that the reasoning behind restricting these substances be scientifically-based in order to ensure that any proposed restrictions will achieve the intended goal of increased benefit and protection to human health and the environment. Before restrictions are implemented for these substances, a full life cycle assessment of the substance and its alternatives must be conducted in order to ensure that the substitution does not have unintended adverse environmental and human health impacts. There should be clear and compelling evidence that potential alternatives are available, are reliable over the long-term and are preferable from a life cycle perspective. Until life cycle assessments are conducted proving that the environmental and human health impacts across the alternative's life cycle are better than the substances being replaced, the Ministry should not restrict any substances.

Several substances included in Schedule III have been proven to be safe for human health and the environment and should not be restricted under the Ministry's proposal. For example, Tetrabromobisphenol-A (TBBPA), the most common flame retardant used in over eighty percent of printed circuit boards, has been safely used for decades. The World Health Organization² and

¹ U.S. Environmental Protection Agency. August 2007. Solder in Electronics: A life Cycle Assessment. Available at <http://epa.gov/dfe/pubs/solder/lca/index.htm>.

² An Overview of Alternatives to Tetrabromobisphenol-A (TBBPA) and Hexabromocyclododecane (HBCD). March 2006. <http://www.sustainableproduction.org/downloads/AlternativestoTBBPAandHBCD.pdf>

the European Commission Scientific Committee on Health and Environmental Risks (SCHER)³ conducted separate, comprehensive scientific assessments of TBBPA and both found TBBPA to be safe for human health and the environment. TBBPA should not be banned under the Ministry's proposal because scientific evidence has not shown any risks to be associated with the use of TBBPA in electronics.

An often stated explanation for the proposed restriction of halogen containing materials, including TBBPA, is the formation of dioxins and furans during incineration. Regulated, controlled incineration of bromine- and chlorine-containing materials does not pose a problem for human health or the environment.^{4,5} Dioxin formation occurs for low-temperature, uncontrolled incineration, such as that conducted in substandard recycling processes. A variety of toxic chemicals are released during open burning of electronics products, particularly toxic metals, cancer-causing polycyclic aromatic hydrocarbons (PAHs) and lung-damaging particulates. These materials are released during the open burning of wastes, particularly electronic wastes, even when halogens are removed. Removing halogens from electronics will do little to change the health risks and environmental damages associated with improper disposal of electronics.

The Ministry should consider removing medical devices and monitoring and control instruments, Categories V and VI, respectively, from the list of product categories covered because they are extremely complex electronic equipment. These product categories were originally omitted from the European RoHS Directive, with the intention of phasing them in at a later date, because they require extensive research and testing to determine if they can function properly without the six heavy metals restricted under the European RoHS Directive. The Ministry's proposal suggests restricting an additional twelve substances from these and eight other product categories. The medical device and monitoring and control equipment manufacturers may be unable to find suitable alternatives for all twenty substances identified in the Ministry's proposal by the expected deadline. The Ministry should institute a phase-in plan for medical devices and monitoring and control equipment, similar to that proposed for the revision of the European RoHS Directive.

We urge the Ministry to harmonize the list of substances for restriction with the current RoHS Directives in the European Union and China. If the draft regulation is implemented manufacturers will need to make products specifically to comply with India's long list of prohibited substances resulting in increased costs, which would be passed on to the consumer. These additional costs and technical challenges would make it very difficult for Indian manufacturers to compete globally. In order to keep India competitive, the Ministry should align its proposal with the EU and China RoHS Directives.

³ 2,2',6,6' – Tetrabromo-4,4'-Isopropylidene Diphenol (Tetrabromobisphenol-A) Environmental Part. January 15, 2008. http://ec.europa.eu/health/ph_risk/committees/04_scher/docs/scher_o_071.pdf

⁴ Waste-to-energy: A review of the status and benefits in USA, C.S. Psomopoulos, A. Bourka , N.J. Themelis, Waste Management 29 (2009) 1718–1724.

⁵ “The impact on health of emissions to air from municipal waste incinerators” Health Protection Agency, September, 2009. http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/51473372175

IPC encourages the Ministry to evaluate substances for restriction using strong scientific information. Substances for restriction should be examined to assess their effects on human health and the environment. Those found to be harmful should be banned. Substances found to not be harmful to human health or the environment, such as TBBPA, should not be banned. The Ministry should also consider using the list of restricted substances in the EU RoHS Directive as the basis for developing substance restrictions. It is important that regulations are scientifically-based to ensure the utmost benefit to human health and the environment.

Sincerely,

A handwritten signature in cursive script that reads "Fern Abrams".

Fern Abrams
Director, Environmental Policy and Government Relations