

Meeting the Challenge

Detailed Recommendations for Implementation of the Challenge to the Electronics Industry: Adopt Safer and More Sustainable Products and Practices, and Eliminate Hazardous Chemicals, Exposures and Discharges

June 2015, Version 2.0

The Challenge

On March 16, 2015, the International Campaign for **Responsible Technology (ICRT)**, the GoodElectronics Network and their allies around the world issued a formal Challenge to the electronics industryⁱ to adopt safer and more sustainable manufacturing practicesⁱⁱ and to proactively reduce and eliminate chemical and physical hazards through the development and adoption of safer alternatives. This is necessary to protect and promote human rights, workers' rights and the environment. This Challenge has been endorsed by over 200 organizations and individuals from more than 40 countries. It calls on the electronics industry to:

- Respect human rights, workers' and community rights, including:
 - The right to safe and healthy workplace;
 - The right to healthy communities and a safe environment;
 - The right to know what hazards are present in electronics workplaces and surrounding communities;
 - The right to an effective remedy when harm occurs;
 - The right of workers to organize unions without interference and to bargain collectively.

- Take concrete actions throughout the supply chain:
 1. Be transparent;
 2. Use safer chemicals;
 3. Protect workers;
 4. Promote, guarantee and defend the participation of workers and communities;
 5. Protect communities and the environment;
 6. Compensate and remediate for harm to people and environment.

[Read the Challenge in its entirety](#)

Recommendations for action and change

Electronics companies must promote and provide work environments that protect workers' and community health. While they have this responsibility for the entire life-cycle of electrical and electronic products - from material extraction through materials processing to product manufacture, use, re-use, recycling and disposal – this document focuses on only the process of manufacturing.ⁱⁱⁱ

1. Transparency

To safeguard workers and community residents from harmful chemical exposure, both workers and communities must know what chemicals are being used and stored on the production site, what is being transported to and from the facility, what is being discharged and released both inside and outside the factory, and what hazards these substances pose to people (including reproductive hazards) and the environment. Workers must know what substances they are handling in their daily work. This transparency requires companies to provide **full materials disclosure** to workers, community residents and their representative organizations.^{iv}

Brands must disclose their complete supply chain as well as all of the materials used by all of their suppliers. Where inadequate hazard data are unavailable for any chemical, this also needs to be disclosed.

Transparency and disclosure require action. Companies must:

- **Provide health and safety information.** Workers and community residents must receive full, up-to-date, understandable and free-of-charge health and safety information about chemical hazards. These published and peer-reviewed studies should make clear who has to do what to ensure a safe work environment when hazardous chemicals are being used. In addition, fully referenced scientific/technical data upon which this information is based must be provided upon request. It is the brands' responsibility to ensure that contract manufacturers, ODMs, component manufacturers and others in their supply chains provide this information to workers, communities and the general public.
- **Share hazard information without restriction.** Information on the health, safety and environmental effects of substances used in production and present in electronics and electrical products must be shared without restrictions with workers, communities and their representative organizations. Even when specific material formulas are confidential, the hazard information shall not be so considered.
- **Provide all Safety Data Sheets (SDS).** Globally Harmonized System (GHS)-compliant safety data sheets must be freely and easily available to workers, communities and their representative organizations, for all materials stored, used and discharged from the workplace. For substances whose environmental or human health effects are inadequately or incompletely characterized, the principles outlined below at the end of Section 2 apply.

- **Cooperate with education and training initiatives.** Companies shall cooperate with governments, non-governmental organizations, trade unions, health care providers, and other third party experts to provide ongoing education and training for workers, community representatives and emergency medical responders. Brands must ensure training and education throughout their supply chains. Education and training must cover:
 - monitoring and early warning systems for dangerous chemicals used or created during production;
 - detailed information about hazardous substances in production, and best practices for protection from and reduction of exposure to those hazards;
 - how to recognize early signs of adverse health impacts;
 - implementation of good industrial hygiene practices to prevent and/or minimize exposures or the risks that these exposures create. Implementation entails controlling hazards at or as closely as possible to the potential source, along the exposure path if control at the source is not possible, and with personal protective equipment only as a last resort when engineering controls at or close to the source do not provide sufficient protection.

- **Maintain and disclose chemical inventory.** Companies shall maintain an inventory of all materials and chemical substances used and generated throughout the production process following the Globally Harmonized System (GHS). Companies will disclose this information to workers, communities and their representative organizations at least annually (updated) and make this information publicly available. Brands will include contract language with their suppliers requiring disclosure of all materials used in production processes, not just those substances that appear in the final products. In addition, brands shall implement an effective system to accept and manage all chemical disclosure information in real time in order to track chemical use and management by suppliers.

2. Use safer chemicals

The electronics industry (brands, manufacturers, and suppliers) and governments of countries where production occurs will reduce hazardous exposures by eliminating or substituting the most hazardous substances and most hazardous production processes, i.e. those processes where exposure to multiple hazardous chemicals occurs and particularly where women of childbearing age are the majority of the workforce. This priority activity covers substances brought into the production process, created during production and substances which remain in the product and become problematic when the product is used, recycled or disposed. This action can be accomplished by assessing hazardous materials used in manufacturing throughout the product lifecycle and replacing them with safer alternatives wherever possible, as described below:

- **Conduct alternative assessments.** The brands and chemical suppliers, with full participation by trade unions representing their workers (or workers' representatives freely chosen by them if no trade union exists), shall conduct ongoing alternatives assessments of chemicals of concern and hazardous materials used in products and in production.^v Assessment, including potential non-chemical-based alternatives, will be used to implement green design alternatives and select safer substitutes for hazardous materials



used in production. Assessment processes acceptable to all parties will be the basis for informed substitution where safer alternatives exist, or for innovation in new formulations and materials, or for product redesign. These assessments are best led by workplace Joint Health and Safety Committees or, where none exist, with the full participation of those who face the risks.

- **Chose safer substitutes.** When reducing the use of substances of concern, companies shall select substitutes that are inherently safer than the substances they replace.^{vi} Substitutes include safer chemicals, materials and products as well as eliminating the need for the chemicals in the first place. Brands must integrate these principles into their corporate chemicals policy.
- **Consider a broad range of hazardous properties.** Chemicals proposed as safer substitutes must be significantly less hazardous than those they replace. This means they should be significantly less toxic, persistent, bio accumulative or bio concentrating, carcinogenic, mutagenic, neurotoxic, endocrine disrupting, or hazardous to reproduction and development, etc. than the chemicals they replace. Industry lists of preferred chemicals will be subject to periodic review with the full participation of trade unions or workers' representatives where no unions exist.
- **Research safer substitutes.** The brands and chemical suppliers shall develop safer substitutes and safer production processes in all cases, prioritizing those where none currently are known. Robust, innovative, independent and transparent research is needed.
- **Use the same, highest standards worldwide.** Hazardous chemicals and processes that are no longer used in developed countries are often still in use in developing countries. Environmentally harmful technologies or products that cause severe environmental degradation or are harmful to human health shall not be transferred to other countries. Prohibited processes or products must never be used anywhere in the supply chain.
- **Follow hierarchy of controls to prevent exposure.** Where knowledge does not currently permit production risks to be eliminated by substitution, the brands will ensure that risk is reduced to a minimum by application of preventive measures and exposure controls. These include, in order of priority:
 - **engineering controls and use of inherently safer equipment and materials** to avoid or minimize the release of hazardous substances which may present a risk to the safety and health of workers and the community.
 - **protective measures applied at the source or as close as possible to the risk**, such as adequate local ventilation, barriers, and/or appropriate work procedures and organizational measures.
 - **application of individual protection measures as a last resort** where exposure cannot be prevented by other means, including personal protective equipment, provided free of charge and replaced regularly by the employer.

Where the environmental or human health effects of a substance are unknown, its use shall be avoided; where it is inadequately or incompletely characterized, the precautionary principle^{vii} shall apply until all relevant hazard testing is available. Where there is inadequate information

available to fully assess a particular material, the company has a duty to inquire to the chemical manufacturer to seek additional information about potential hazards and will either avoid its use or provide workers with the best possible protection until the hazards are clarified.

Precautionary Principle: When an activity raises threats of harm to human health or the environment, precautionary measures shall be taken even if some cause and effect relationships are not fully established scientifically.

3. Protect Workers

The brands shall ensure that their own and all workplaces throughout the supply chain are safe for all workers, regardless of gender or age. Risks from hazardous substances to the safety and health of workers, who are routinely exposed to low levels of multiple chemicals on the job, must be eliminated or reduced to a minimum, including risk to the pregnant worker and her fetus. This responsibility includes the prevention of harmful toxic discharges into communities surrounding manufacturing facilities and throughout the product lifecycle, beginning in mining communities, continuing with workers in chemical manufacturing and communities, and ending with workers involved in informal and formal e-waste recycling.

- **Map processes.** The brands must map each manufacturing process used to make its products. Each supplier must document which processes are used, at which locations, to manufacture materials, components, and subassemblies, and in final assembly.
- **Identify potential for harm.** The brands must assess the potential for harm connected with each of the processes identified above. The assessment process shall be conducted by industrial hygienists knowledgeable about the relevant toxic materials and an occupational medicine specialist.
- **Identify the chemicals generally used (and generated) in each process.** The brands must take responsibility for the safe use of chemicals used for each process, including the best methods for safe management of each chemical during transport, storage, and manufacturing, and as waste.
- **Inventory the actual chemicals used (and generated).** The identity and volume of all chemicals used in each process shall be disclosed on a quarterly basis as well as how each chemical is managed as waste. Brands and suppliers share this responsibility. Periodic testing shall be done to identify all of the materials in the waste stream, including those generated during production.
- **Determine hazard potential.** The brands and suppliers shall (based on advice of qualified experts) evaluate each material used and generated to determine which have potential to cause harm when released into the workplace air, external air, wastewater, waterways or onto land.
- **Develop and implement comprehensive workplace hazard monitoring protocols and methods that take into account privacy and are gender- and culture-sensitive.** The brands must develop and implement, jointly with affected and interested workers and their

organizations, comprehensive hazard monitoring to assure a safe and healthy workplace throughout the product lifecycle. This includes:

- Participatory training of all workers and managers potentially exposed to Materials of Concern;
- Capacity building for all workers and managers potentially exposed to Materials of Concern;
- Comprehensive ongoing industrial hygiene and environmental monitoring to measure the release of and exposure to all Materials of Concern used and/or generated in manufacturing/production;
- Ongoing independent comprehensive health surveillance by qualified experts that is occupationally-relevant, for all workers, to identify and prevent diseases. Results shall be disclosed to workers in a detailed, timely manner;
- Recognition of workers' rights to negotiate regarding hazardous working conditions and to refuse hazardous work without fear of retaliation.

Comprehensive monitoring, including industrial hygiene monitoring to measure exposures and health surveillance to identify and prevent disease, must be extended to all workers in the supply chain, including workers involved in extraction of raw materials, processing of raw materials, manufacture and assembly of components and products, as well as workers involved in re-use and recycling, especially workers in the informal sector.

- **Conduct monitoring, measuring and documenting exposures. The brands shall create, oversee and manage** procedures for all suppliers to use in monitoring and measuring releases of hazardous chemicals to the workplace, to the external air, wastewater, waterways, and to land (see Appendix A). Properly calibrated or otherwise verifiable equipment shall be used and maintained for required monitoring and measurement. Measurements of worker exposure shall evaluate ongoing exposures, as well as short-term spikes in exposures. Monitoring shall be conducted by a certified Industrial Hygienist, or equivalent.

4. **Guarantee worker and community participation**

Workers and community residents potentially affected by hazardous exposures must be encouraged and allowed to participate fully in the sound management of chemicals and wastes in their workplaces and communities. To achieve this goal of inclusion, workers must be able, without interference from employers, to organize in the workplace, join unions, develop democratically elected worker health and safety committees and effective training programs, and pursue other organizing activities to make their workplaces safer.

- **Workers have the right to collectively bargain** as a fundamental human right guaranteed by the UN's Universal Declaration of Human rights (1948) and by the ILO Declaration on Fundamental Principles and Rights at Work (1998). The brands, with the full participation of workers and their representatives shall enhance and implement ILO safe work standards and ILO guidelines^{viii} on occupational safety and health, with special care for vulnerable or precarious workers, including women and immigrants. Besides the right to organize, these protections shall include the right to monitor and enforce effective health and safety protections in the workplace; to

refuse or shut down unsafe or unhealthy work; and to be protected from retaliation for exercising their rights (right-to-act and “whistle-blower” protection).

- **Joint Health and Safety Committees** in the workplace, are to be encouraged even if not required by law, with the worker representatives to be fairly elected by their peers. The brands and suppliers shall develop frameworks to promote the active and meaningful participation of all stakeholders in the sound management of chemicals and wastes, including community representatives, non-governmental organizations, managers, workers, and trade unions.

All hazard communication, education and training shall be conducted in appropriate languages understood by the workers.

5. Protect communities and the environment

Prevent harm throughout the product lifecycle by conducting effective, transparent, independent monitoring and public reporting of all discharge streams from all facilities, and eliminate hazardous exposures and discharges to air, waterways, and land. When there is evidence that pollution from an electronics facility or a recycling facility has polluted the air, water and/or land, the company shall be responsible for all clean-up and remediation costs. It is particularly important to ensure that communities near rare earth mineral processing facilities and communities near mines, including those of conflict minerals and rare earths, are provided with effective levels of health protection.

6. Compensate and remediate for harm to workers, communities and the environment

Because the work of electronics manufacture is characterized by multiple exposures to chemicals and substances which may be incompletely tested, inadequately regulated, and frequently changed, it is particularly important that governments develop and implement employer-funded compensation systems designed to support victims of toxic exposures in the workplace and the community. Fair compensation mechanisms must ensure that workers and community members harmed by exposure qualify for and receive emergency relief; adequate, just and timely compensation; and treatment and rehabilitation for as long as is needed to fully address and, when possible, correct the harm.^{ix}

Remedies and funding mechanisms must be designed to ensure that the brands shoulder responsibility for potential harm by internalizing all costs of health and environmental degradation that are currently externalized. This will incentivize the use of safer materials and processes to prevent future harm.

Background

Strategic Approach to International Chemicals Management (SAICM)

In presenting this Challenge, we are guided by the outcomes of the International Workshop on Hazardous Substances within the Life Cycle of Electrical and Electronic Products held in 2011 under the auspices of the United Nations Strategic Approach to International Chemicals Management (SAICM). Adopted by the International Conference on Chemicals Management (ICCM) on 6 February 2006 in Dubai, United Arab Emirates, the Strategic Approach to International Chemicals Management (SAICM) is a policy framework to foster the sound management of chemicals. SAICM was developed by a multi-stakeholder and multi-sectoral Preparatory Committee and supports the achievement of the goal agreed at the 2002 Johannesburg World Summit on Sustainable Development of ensuring that, by the year 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health. Progress in the implementation of SAICM was reviewed at the third session of the ICCM held from 17 to 21 September 2012.

More than 100 representatives of governments, NGOs and the electronics industry met in Vienna, Austria as an expert group to consider means to advance the Sound Management of Chemicals within the electrical and electronic products industry. The participants included 32 government representatives from both electronics manufacturing countries (China, Czech Republic, Germany, Indonesia Japan, Malaysia, Philippines, Thailand, and Vietnam) and countries affected by electronic waste (China, Colombia, Cote d'Ivoire, Ethiopia, Ghana, Indonesia, Malaysia, Mozambique, Nigeria, Peru, Philippines, Tanzania, Thailand, Vietnam, and Zambia.) The Workshop adopted key recommendations on addressing hazardous chemicals throughout the lifecycle of electronics for use in developing global decisions and cooperative actions. As many speakers pointed out, there is a pressing need for a fundamental paradigm shift to promote the development of clean technology, clean design, and to phase out the use of hazardous materials throughout the lifecycle of electronic products.

Three of the essential messages adopted unanimously by the group of experts from around the world were:

- Preventing harm to human health and the environment from hazardous substances in the life-cycle of electrical and electronic products is essential.
- The life-cycle approach in the sound management of chemicals found in electrical and electronic products is of key importance.
- The expected growth in the electrical and electronic sector (due to Moore's Law) and the need for its long term sustainability will require making parallel and proportional improvements in environmental, health and safety, and social justice attributes.

The SAICM document proposes specific steps for the "Mid-Stream" of the life cycle which was defined as production and manufacturing (the other 2 parts of the life cycle addressed were "Upstream" (Design) and "Downstream" (end of life, or e-waste). More information is available at: <http://www.basel.int/Portals/4/Basel%20Convention/docs/eWaste/HsInternationalWorkshopEwasteLifeCycle-Vienna-20110329.pdf>

Appendix - Monitoring Principles and Protocols

Industrial Hygiene (H) Monitoring for Manufacturers Using Materials of Concern (MOC)

The brands whose suppliers use one or more materials of concern shall establish, implement, and maintain a documented Industrial Hygiene monitoring program to eliminate workplace hazards and exposures to hazardous materials, protect workers and their health and safety rights, maximize injury and illness prevention, and ensure that operational controls are adequate. The program shall be developed with oversight by the relevant government agency and the full participation of workers, their representatives and community representatives.

Initial Industrial Hygiene monitoring and bio-monitoring

Conduct and document Industrial Hygiene (IH) monitoring twice in the first year, at least four months apart, in all areas where MoCs are received, stored and used, and in any areas where hazards could be present, are likely to develop or could migrate, and shall include:

- All airborne hazards for everyone working where exposure to any MOC may occur, including worker breathing zones. The Organization shall monitor specific airborne hazards in accordance with requirements developed by independent industrial hygiene experts, which specify the monitoring protocols, levels of detection required, etc. for all MOCs;
- Potential dust residue found throughout the manufacturing setting;
- The purpose of these monitoring requirements is to protect workers and the community by collecting data, better understanding risks associated with specific types of operations in the electronics manufacturing industry, improving industrial hygiene practices based on results obtained, and further revising this Standard based on analysis of data;
- Conduct appropriate medical surveillance for all MOCs identified in the IH monitoring.

Document testing/monitoring protocols

Maintain thorough written documentation of both initial and ongoing monitoring protocols and activities, consistent with best practices regarding worker, environmental and plant safety, and consistent with all relevant legislative or regulatory requirements.

Analyze and respond to test results

Ensure that a qualified Industrial Hygienist or equivalent and/or a physician qualified in occupational medicine and/or medical toxicology analyzes monitoring results (including calculating time-weighted averages) and compares these results to the most stringent (health protective) regulatory exposure limit(s) in effect for each of the individual materials contained in the Materials of Concern list, regardless of whether the most health protective limit is promulgated by an occupational or environmental health body. If no such health protective limits exist, then the requirement is to monitor to the limits of detection. For purposes of this section, “health protective” means exposure limits designed to protect the whole community, specifically including workers and their offspring from the following endpoints: carcinogenicity, reproductive harm, developmental toxicity, neurotoxicity, endocrine disruption, and mutagenicity.

Monitor and ensure effectiveness of mitigation activities and controls, and impacts of significant changes

Utilizing these test results, take corrective and preventive actions by responding quickly to preserve and protect worker and community health.

Share monitoring information with workers and surrounding communities

The brands, with the participation of workers, their representatives and community representatives, and with oversight from government, shall provide workers and surrounding communities with all occupational and environmental health monitoring protocols and records including the extent and duration of each person's exposure, as well as health outcomes data, corporate health records, and other relevant records, while making sure to protect confidentiality for each individual;

- The brands shall ensure protection of individual confidentiality for monitoring and exposure data;
- In some cases, a program of medical surveillance^x of workers may be valuable. When the medical surveillance indicates that there may be significant health concerns, the Brands shall provide adequate funding to facilitate comprehensive and independent epidemiological assessment;
- In those situations where pollution from electronics production facilities has been found in surrounding communities, the brands shall cooperate with health researchers and investigators to assess and control adverse health impacts, especially with respect to vulnerable populations.
- Medical, technical and scientific staff involved in occupational health monitoring and/or epidemiological studies must adhere to high ethical standards and prioritize workers' rights and worker health over employer priorities. Their first duty and accountability is to workers, no matter how or by whom their work is funded.
- The brands shall ensure that Industrial Hygiene samples are analyzed by an ISO 17025 certified laboratory or by a nationally accredited laboratory that is capable of testing for the necessary constituents.

Environmental, health, and safety incident monitoring and reporting

The manufacturer shall establish and maintain a process for internal reporting of events including a summary log and up-to-date and accurate records of all environmental releases, accidents affecting health and safety, incidents, injuries, exposures, and near misses. This process shall include ongoing reporting of such events by the supplier to the brand. The brand shall ensure that reports of environmental releases are included in the supplier's PRTR reporting for the relevant country.

Endnotes

-
- i While this document speaks of manufacturers, companies and employers, we identify the “brands” as the responsible party in relation to the rest of the supply chain. The brands hold the dominant position and thus hold the responsibility to assure that their suppliers are in compliance with each and all of these provisions.
- ii See <http://bit.ly/1tNftfD> :“The manufacture and use of electrical and electronic products has increased dramatically over the past several decades and includes rapid growth in contract manufacturing, which takes place through a complicated chain of subcontractors, often located in Asia. The rapid growth of the industry has been accompanied by increased use of toxic chemical substances and a variety of adverse health outcomes have been observed, including in Asian manufacturing facilities..... . Compounding issues include weak occupational exposure limits (if any); lack of uniform protective exposure standards for workers, including the presence of child laborers; lack of information about the hazardous substances used in and released from electrical and electronic products; use of tactics by special interests to delay protective action; lack of advisory panels on occupational health policies that provide diverse perspectives with clear conflict of interest policies; and often the complete absence of tracking and reporting of patterns of disease associated with the electronics sector. “Improving Occupational and Environmental Health in the Global Electronics Industry”, Resolution adopted by the American Public Health Association, on October 30, 2012.
- iii For responsible extraction practices, see Responsible Mining Assurance (IRMA) <http://www.responsiblemining.net/>; for end of life-cycle best practices, see e-Stewards, <http://e-stewards.org/>
- iv When referring to obligations to or participation by workers, this obligation also applies to trade unions representing the workers (or workers’ representative freely chosen by them if no trade union exists).
- v Definitions of materials of concern (from SAICM) include substances that are:
- persistent, bio-accumulative or bio-concentrating, and/or toxic ;
 - carcinogens, mutagens, teratogens and other reproductive or developmental toxicants;
 - known or suspected to adversely affect the neurological, respiratory, immune or other systems and/or;
 - endocrine disrupting compounds;
 - respiratory hazards, including asphyxiates and irrespirable dust and fibers;
 - capable of additive or synergistic effects where exposure to multiple hazardous chemicals are present;
 - highly corrosive, flammable, explosive, reactive or oxidizing;
 - bio-hazardous; or
 - radioactive.
- It is also important to develop a special focus of precaution on nano-materials, which are increasingly being introduced into electronics manufacturing, often without comprehensive health and safety testing.
- vi There may be very rare exceptions to this rule if, for example, a substitute is not less toxic but is much easier to contain, control or dispose of.
- vii See <http://www.sehn.org/wing.html> and <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1446778/> — “While we realize that human activities may involve hazards, people must proceed more carefully than has been the case in recent history. Corporations, government entities, organizations, communities, scientists and other individuals must adopt a precautionary approach to all human endeavors. Therefore, it is necessary to implement the Precautionary Principle: When an activity raises threats of harm to

human health or the environment, precautionary measures shall be taken even if some cause and effect relationships are not fully established scientifically.”

In this context, the proponent of an activity, rather than the public, shall bear the burden of proof. “Where there are threats of serious or irreversible damage, scientific uncertainty shall not be used to postpone cost-effective measures to prevent environmental degradation.” It is a fundamental aspect of the precautionary principle to “shift the burden of proof” to require the employer to demonstrate “safety” rather than require those exposed to harmful substances to bear the burden of proving that their illness was “caused by” exposure to harmful substances, which employers often claim can only be proved through robust epidemiological evidence (which is usually nonexistent).

viii For more information on the ILO Safe Work Program and OSH guidelines, see:

<http://www.ilo.org/safework/lang--it/index.htm>; and <http://ilo.org/global/topics/safety-and-health-at-work/lang--en/index.htm>; http://www.ilo.org/legacy/english/protection/safework/worldday/facts_eng.pdf and http://www.ilo.org/safework/info/standards-and-instruments/WCMS_107727/lang--en/index.htm.

ix In order to design a just compensation mechanism, the presumption of chemical culpability is necessary: when electronics workers from a facility, or community members near a facility, that uses chemicals of concern become ill (or have children born with birth defects) and there is evidence that the chemicals of concern can cause the particular illnesses or birth defects, then the presumption shall be that the illness or birth defect is compensable, unless the employer can prove that there was no exposure or that the chemicals were not the cause of the illness or birth defect.

x Medical surveillance or monitoring may be valuable in some cases but there are ethical and privacy concerns. Medical monitoring programs should pass the following tests:

- the proposed monitoring procedure has a reasonable chance of diagnosing a condition that is work-related (either is caused by work or affects the bona-fide capacity of the worker to do the work);
- there is a benefit to the worker, e.g. the conditions diagnosed have better treatment options or better outcomes if diagnosed early;
- the worker and his/her personal physician will be fully informed of all results, positive or negative;
- the medical monitoring program is jointly (union-management) designed and managed, with proper protections for medical confidentiality;
- the consequences for workers who may be identified as unfit for work are clear and provide adequate income and other protections, e.g. accommodation, re-assignment, rehabilitation, or disability leave as appropriate.

It is not acceptable to create programs without clearly defined work-related goals, nor to use workers as experimental subjects for the development of medical monitoring procedures, nor solely for the professional benefit of a researcher.