The Safety of Xerox® Products

Facts about the safety of Xerox® products.

Document Version: 1.1 (July 2017).

Contents

1. General Information

Environment, Health, Safety and Sustainability Policy at Xerox

The Environment, Health, Safety, and Sustainability (EHS&S) organization at Xerox ensures company-wide adherence to Xerox's environment, health, safety, and sustainability policy. The governance model we use to accomplish this includes clearly defined goals, a single set of worldwide standards, and an audit process that ensures conformance to these requirements. Our EHS&S governance and policy, adopted in 1991, forms the foundation of our environmental leadership program.

It is the policy of Xerox Corporation to:

1. Comply with applicable environment, health and safety laws, rules, regulations and Xerox Standards;
2. Take appropriate measures to protect the environment and health and safety of our employees, customers, suppliers and neighbors from unacceptable risk;
3. Take appropriate measures to prevent workplace injuries and illnesses; provide employees with a safe and healthy work environment;
4. Assess environment, health, and safety impacts before starting a new activity or project;
5. Comprehend environment, health, and safety impacts in the design and acquisition of products and services;
6. Eliminate unacceptable risks from facilities, products, services and processes;
7. Strive for continual improvement in conserving natural resources, eliminating the use of toxic and hazardous materials; preventing pollution; recovering, reusing, recycling; and
8. Require suppliers to adhere to applicable environment, health, and safety laws, rules, regulations and Xerox Standards.

Overview

To ensure full compliance with the above policy, health, safety and environmental considerations are an essential element of the product and materials design and review process, involving internal and external world-class experts.

Extensive system testing is conducted under a variety of simulated field and stress conditions to verify that all the health and safety requirements have been met. Our internal test groups conduct some of these tests while external testing organizations perform others.

Xerox has a long history of proactively assessing the health and safety of the materials used in its products using a wide variety of methods. These measures drive elimination of the use of persistent, bio-accumulative and toxic materials throughout the supply chain and the safety of our equipment and consumable products.

Whenever new information raises a concern about the safety of a product, we investigate and, when warranted, take prompt action with health and safety consideration being our highest priority.

Safety Data Sheets

Xerox prepares two types of data sheets that summarize safety and health information for our equipment and consumables products:

- **Product Safety Data Sheets** (PSDS) contain information about the mechanical, electrical and environmental attributes of our equipment as well as product emission data.
- **Safety Data Sheets** (SDS) provide information on the globally recognized classification and the safe use of products that may be chemical substances or mixtures. They also contain storage, shipping and disposal information.

General Safety Practices

To ensure the safety of those who use and care for our equipment, it is important to observe these fundamental rules:

- Site the equipment according to published Xerox® installation requirements. When moving equipment to a new location, review installation requirements.
- Connect the equipment to a properly grounded electrical service outlet.
- Comply with all caution and warning labels in order to avoid potentially hazardous conditions.
- Do not bypass or defeat interlocked covers. These covers prevent creation of hazardous conditions, which could occur if they were opened.
- Only trained service personnel may remove covers or guards held in place by fasteners that cannot be detached without using tools.
- Only use Xerox approved maintenance procedures and materials.
- Stop the equipment immediately, disconnect it from its power supply and have it serviced before the next use in the event of unusual noises, odors or smoke.
- Dispose of spent materials and products according to information provided on Safety Data Sheets, which can be found on www.xerox.com/environment
- Do not stare at equipment light sources, which can produce temporary nuisance effects or discomfort.

Equipment Design

Xerox policy requires that products meet safety standards that are at least as strict as the generally accepted standards of approval agencies and government regulations. For each product brought to market, Xerox has a comprehensive Product Safety Requirement List that details the specific safety requirements.

All possible hazards are assessed: electrical, mechanical, chemical, biological, radiation, heat, emissions and noise. Results of assessments must be satisfactory in all areas before shipping equipment to the customer.

In addition to these assessments, service procedures, service materials, special tools and the operator's manual must all be approved prior to customer shipments. Installation instructions define minimum product space requirements to ensure proper equipment performance and to provide adequate access for service.

Xerox® products are typically submitted to a nationally recognized testing laboratory such as Underwriters Laboratories® (UL), Canadian Standards Association (CSA) or TUV Rheinland®, resulting in product certification to the latest country-specific version of internationally accepted product safety standards, such as IEC 60950 (Safety of Information Technology Equipment).

Products are also CB Scheme Certified and CE marked for sales in European Union markets and the equivalent schemes of other countries where they may be marketed.

Consumables

Xerox takes a conservative position on potential health risks to our employees and customers. Accordingly, Xerox has established strict internal standards limiting the use of potentially hazardous materials in consumable products. In some cases, this includes setting internal company exposure limits, known as Xerox Exposure Limits (XEL), for specific chemical or physical agents. Xerox Exposure Limits are more stringent than external consensus or regulatory limits.

2. Xerox® Products

Electromagnetic Compatibility

Xerox® products are designed to function properly in the intended electromagnetic environment without causing harmful interference to nearby equipment or radio communication services. In this regard, Xerox® products comply with all governmental regulations covering Electromagnetic Compatibility (EMC). Appropriate product testing verifies compliance.

Ergonomics/Human Factors

Human factors are an integral part of our design process. Our multidisciplinary team of professionals evaluates Xerox® products to ensure usability by our customers, serviceability by our technicians and ease of assembly by our manufacturing personnel.

Document Illumination

Staring at lamps can sometimes produce an afterimage, but this is of short duration and has no permanent effects. Due to the intensity of some light sources, some lamp systems are interlocked with the platen cover to prevent this. We recommend that all platens be covered while making copies, in order to minimize exposure and facilitate good copy quality.

Lasers

Xerox® products containing lasers present no hazard to equipment operators or bystanders and are designed and built to comply with the strict safety requirements of governmental and international standards. Product designs ensure that potentially harmful laser beams are contained within the equipment. Covers and shields need not, and should not, be removed for customer maintenance. Covers that may be removed by Xerox service personnel are labeled to indicate potential laser hazards. No service mode requires direct viewing of the laser beam or permits the beam to exit the confines of the equipment. Service personnel following established adjustment procedures are not exposed to potentially harmful laser beams.

3. Xerox® Supplies

Materials Safety Evaluation

Materials used in our consumable products are classified and labeled in compliance with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) and meet our own stringent internal safety requirements. During the assessment of any material or product, both its inherent properties (potential hazards) and the potential exposures to customers and service personnel are considered.

The various materials used in imaging processes undergo a full toxicological evaluation, which reviews published technical data and information obtained from responsible testing. The safety evaluation process considers possible acute and chronic effects as well as the potential for eye and skin irritation. Various bacterial and mammalian cell type tests are used as predictors of potential genotoxic effects.

When published data is lacking, additional testing may be required. If that is the case, all tests are performed to the Organization for Economic Cooperation and Development (OECD) methods by independent laboratories that operate in accordance with the rules of good laboratory practice, and the results are documented and placed into the health and safety archives. Further, all laboratories used in safety testing are accredited by, or meet the standards of, the American Association for Accreditation of Laboratory Animal Care. Responsible use and humane treatment of animals are basic requirements of sound scientific research and the generation of valid test data. Whenever feasible, we utilize alternatives to animal testing; however, viable alternatives do not always exist. In all instances, we ensure that our safety testing activities are in full compliance with worldwide regulatory standards and requirements.

Results of the toxicological evaluation are in Safety Data Sheets and the details of the review and any applicable test reports are available to appropriate health and safety regulatory agencies when needed.

Toners and Developers

Some Xerox® toners are fine powders composed of plastics, colorants and small quantities of functional additives. They are not considered to be hazardous preparations according to any regulatory classification criteria. Toner constituents must not only produce images having high xerographic quality but also pass our health and safety reviews.

The toners are typically designed using styrene-acrylic, styrene-butadiene or polyester polymers. In black toners, several different specialty grade carbon blacks or iron oxide are used as colorant, while various dyes or pigments are employed for color images. During the toner manufacturing process, the carbon black (or other colorant) and polymer are combined in such a way that the colorant becomes encapsulated by the polymer.

Under normal operating conditions and other foreseeable conditions, the toners are entirely stable and no significant decomposition occurs. When exposed to the proper combination of heat and pressure, the toner simply flows and adheres to the paper.

Developers are composed of a carrier material and toner. Xerox® carriers are based on special grades of sand, glass, steel or ferrite types of materials. They are generally coated with a small amount of special polymer to achieve the desired functional behavior in the xerographic equipment.

A comprehensive assessment of new materials in our toners is conducted to ensure conformance with applicable global registration, hazard communication and waste handling and disposal requirements. Because of our stringent requirements, Xerox® toners and printing products are non-carcinogenic and non-mutagenic. In addition, these products do not cause adverse developmental or reproductive effects; pose a toxicity hazard to humans or aquatic species; cause a permanent adverse impact to the skin, eyes or respiratory system; or have the potential to generate federally regulated hazardous waste. Xerox was the first in our industry to evaluate the health effects of toner and did so for over 30 years.

Liquid Inks

Most Xerox® liquid inks are aqueous (water based) inks containing dispersing agents and dyes or pigments. Before being placed on the market, each of the inks undergoes a rigorous safety evaluation to ensure all regulatory requirements are met and that the inks meet the strict requirements of Xerox internal standards.

For some specific applications, such as Direct-to-Object printing, UV curable liquid inks are used. These inks, like all other materials, undergo extensive safety evaluation. They are classified according to GHS and labeled appropriately with all potential hazards outlined in the Safety Data Sheets, along with guidelines for safe handling, storage and disposal.

Solid Inks

Xerox uses solid inks in some imaging applications such as plotters and printers. The various solid inks contain polyethylene, waxes, resins, dyes and pigments. The resultant material is a waxy solid block that is transferred to the printed surface under specific heat and pressure specifications. All the materials used in the manufacture of solid inks are subject to the same rigorous safety evaluation as other imaging materials.

Fuser Lubricants

Some xerographic processes use lubricants as release agents during the fusing process. These lubricants are inert, non-hazardous silicone oils and greases, which have high thermal stability. The lubricants are not mineral oils and are not subject to regulatory controls for such materials.

Photoreceptors

A xerographic photoreceptor is a multilayer device in which photo-conducting layers are very tightly bonded to a substrate. The substrate may be a rigid aluminum drum or a flexible metal belt or polyester film. Most current photoreceptors use a proprietary organic photoconductor. Like all imaging materials, photoreceptor constituents are subject to rigorous safety evaluation.

4. Indoor Air Quality and Emissions

We design our products to ensure that they can be safely located in typical office areas near employee workspaces. Under normal operating conditions and with proper maintenance, machines meet or exceed legal requirements and current standards for emissions and are in conformance with select internationally recognized voluntary guidelines. Additional information about the emission characteristics of Xerox® equipment is in the Product Safety Data Sheets.

Xerox supports our customers' responsibility for maintaining excellent indoor air quality in the workplace. Many factors affect the quality of indoor air including ventilation, office furnishings and building materials, in addition to the type of office equipment and use patterns. Xerox® equipment is tested in conformance with rigorous emission testing protocols to ensure that we meet or exceed current standards and acceptable best practices. For example, we set and adhere to strict internal limits on the amount of ozone, volatile organic compounds, and particulate substances emitted from xerographic products.

Ozone

In xerographic devices, small quantities of ozone are produced as a byproduct of the printing process. Ozone is generated only when the machine is copying or printing. Xerox Ozone Management Guidelines require that equipment situated in locations that do not meet either space or temperature and humidity requirements be equipped with a filter to reduce ozone to an acceptable level. Some equipment is equipped with ozone filters at the factory while others may be retrofitted at the placement site. With production printing equipment, the exposure to ozone is controlled by ducting which routes the emissions away from the area. Xerox emission levels of ozone are substantially below internationally recognized exposure limits. The *Facts about Ozone* publication is available upon request or at www.xerox.com/environment

Volatile Organic Compounds (VOCs)

In some conditions, volatile organic compounds may be emitted during and immediately after copying or printing. The concentrations are low, typically less than 1/100th of the occupational exposure limits for such compounds. Volatile compounds are measured in special inert chambers because their levels are less than the levels found in typical room interiors due to building materials, floor covering and furniture. Measured levels, as included on the Product Safety Data Sheets, also meet many global ecolabel requirements.

Particulates and Dust

During a product's operation, very small amounts of paper dust and toner may become airborne. Most dust created inside the machine is drawn through the heat exhausts and trapped by filters.

Dust associated with copying and printing consists primarily of paper particles and fibers. When paper is handled outside the equipment, paper fragments are also generated. Ultimately, levels of paper dust depend on the composition and quality of the paper used.

Less than 10 percent of the dust generated is toner particles. The levels are significantly below the standard exposure limits for respirable dust.

Odors

Xerox makes every effort to ensure that our equipment does not emit objectionable odors into the workplace. However, since some chemicals have very low odor thresholds, some people with a sensitive sense of smell may sometimes detect faint odors, even though the concentration of the chemical is significantly below any that would present a potential health concern.

5. Additional Topics

Audible Noise

Xerox uses state-of-the art instrumentation and noise test facilities to optimize product designs for low noise and enhanced comfort. Xerox® products do not produce noise levels expected to damage human hearing. Noise emission levels meet various ecolabel and ergonomic guidelines, and are well below legally mandated exposure limits established around the world.

Product Service and Maintenance

Environmental health and safety personnel at Xerox review and approve all service procedures and materials prior to field usage. They assess and control any potential mechanical, electrical, chemical or physical hazards such as lasers, noise, etc. to minimize exposures of our employees and customers. Field usage of these procedures and materials is monitored, and product retrofits, warning labels or special bulletins are made when appropriate.

Xerox has created ways for customers to service their own equipment using web-based service procedures or described to the customer over the telephone. These service procedures have been reviewed and approved by qualified health and safety personnel to ensure that customers are not significantly exposed to physical hazards, chemical or physical agents, ergonomic stressors, or hazardous electrical energy.

Disposal of Spent Supplies and Equipment

Proper disposal of waste materials minimizes environmental impacts. The environmental management program at Xerox identifies hazardous waste materials for proper disposal and encourages recycling or reclaiming of waste products. All materials used in the various imaging processes are evaluated against the following criteria: environmental toxicity and biodegradability, ignitability, corrosivity and reactivity.

Sections 6 and 13 of the Safety Data Sheets provide guidance for managing spills and disposal. For any questions concerning disposal of Xerox® materials, review Safety Data Sheets and observe all applicable governmental regulations.

The Xerox Green World Alliance (www.xerox.com/GWA) collection and reuse/recycling program, in partnership with our customers, results in millions of cartridges and toner containers returned for reuse or recycling each year.

Exceptions or special considerations may apply in the following circumstances:

- Photoreceptors

  The photoreceptors used in our modern equipment have met all the criteria in order to be classified nonhazardous. Return used or damaged Xerox® photoreceptors containing arsenic and selenium to Xerox Corporation or the supplier for disposition. If not returned to Xerox, follow state and local laws regarding disposal of this material. We recommend disposal in a chemical waste landfill.

- Toner or toner cartridges

  Toner or toner cartridges can be recycled locally or returned to Xerox through our Green World Alliance program. Incineration is discouraged, as dust clouds from residual toner may be explosive.

- Developer

  Developer also meets all criteria for classification as nonhazardous and therefore may be disposed of with normal office refuse. However, state and local requirements may be more restrictive so consult the appropriate state and local authorities.

Service Materials

Safety Data Sheets are available for each of the service materials sold by Xerox. These materials have also been evaluated against hazardous waste criteria to determine proper disposal. If the waste materials are classified hazardous and small quantity generator exemptions do not apply, applicable governmental regulations must be observed for proper disposition.

For additional questions concerning disposal of Xerox® service materials, please review the Safety Data Sheets and observe all applicable governmental regulations.

Equipment

Xerox operates a worldwide equipment takeback and reuse/recycle program as described at www.xerox.com/environment

6. Additional Information

It is a fundamental principle of Xerox Corporation to ensure that our products are safe and do not in any way represent a concern to our customers or employees.

More information is available on the Xerox Environment, Health, Safety and Sustainability website at www.xerox.com/environment or contact:

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