Potential Environmental Criteria for the EPP Standard for Printer & Duplication Cartridges

<table>
<tr><th>No</th><th>Environmental Criteria</th><th>Requirements</th></tr>
<tr><td>1</td><td>Presence of harmful substances in new toner powder</td><td>The following harmful substances in new toner powder shall not be present:
Very toxic substances, as defined by OSHA[1], by inhalation and in contact with skin.
Substances that are on California Proposition 65's list[2] and substances classified as carcinogenic by IARC[3]. However carbon black should be excluded.
Substances that may cause heritable genetic damage, i.e., a teratogen as defined by CDC[4].
Substances that may cause sensitization, as defined by OSHA, by inhalation and skin contact.
Substances that may impair fertility, i.e., reproductive toxin as defined by OSHA.
Substances that may cause harm to the unborn child, i.e., fetotoxin as defined by ACOEM[5].
Substances that may be harmful to the infant via the mother's milk.</td></tr>
<tr><td>2</td><td>Presence of azo colorant[6]</td><td>The toners shall not contain azo colorants (dyes or color pigments) that can release the following probable / possible carcinogenic aromatic amines:
<table>
<tr><th>Name</th><th>CAS No.</th><th>Name</th><th>CAS No.</th></tr>
<tr><td>4-aminodiphenyl</td><td>92-67-1</td><td>3,3'-dimetoxybenzidine</td><td>119-90-4</td></tr>
<tr><td>4-aminoazobenzene</td><td>60-90-3</td><td>3,3'-dimethylbenzidine</td><td>119-93-7</td></tr>
<tr><td>Benzidine</td><td>92-87-5</td><td>3,3'-dimethyl-4,4'-diaminodiphenylmethane</td><td>838-88-0</td></tr>
<tr><td>4-chloro-o-toluidine</td><td>95-69-2</td><td>p-cresidine</td><td>120-71-8</td></tr>
<tr><td>2-naphthylamine</td><td>91-59-8</td><td>4,4'-methylene-bis-(2-chloroaniline)</td><td>101-14-4</td></tr>
<tr><td>o-aminoazotouene</td><td>97-56-3</td><td>4,4'-oxydianiline</td><td>101-80-4</td></tr>
<tr><td>2-amino-4-nitrotoluene</td><td>99-55-8</td><td>4,4'-thiodianiline</td><td>139-65-1</td></tr>
<tr><td>p-chloroaniline</td><td>106-47-8</td><td>o-toluidine</td><td>95-53-4</td></tr>
<tr><td>2,4-diaminoanisole</td><td>615-05-4</td><td>2,4-toluilenediamine</td><td>95-80-7</td></tr>
<tr><td>4,4'-diaminodiphenylmethane</td><td>107-77-9</td><td>2,4,5-trimethylaniline</td><td>137-17-7</td></tr>
<tr><td>3,3'-dichlorobenzidine</td><td>91-94-1</td><td>o-anisidine</td><td>90-04-0</td></tr>
</table></td></tr>
<tr><td>3</td><td>Presence of heavy metals in toner[6]</td><td>The toner shall not contain the following heavy metals:
Mercury (Hg), Lead (Pb), Cadmium (Cd) and Chromium Cr (VI) compounds.</td></tr>
<tr><td>4</td><td>Plastic additives[6]</td><td>Plastic & plastic parts of modules manufactured, added or exchanged shall not contain: PBDE (polybrominated diphenyl ethers) or PBB (polybrominated biphenyls) as flame proofing agents. No cadmiated module parts may be used. SCCP (short-chained chloroparaffins) shall not be added to any plastic parts.</td></tr>
<tr><td>5</td><td>Dust emission[6]</td><td>At the time of loading into the unit, the dust emission shall not exceed: A concentration of 0.075 mg/m3 in indoor air. The emission shall be measured under the test conditions described in attachment 3 of the Blue Angel (RAL-UZ62) or comparable test method. Toner modules must be sealed dustproof to prevent the toner from escaping during storage or handling as long as the toner modules has not yet been properly fitted into the device for its designed used.</td></tr>
<tr><td>6</td><td>Photographiclayers[7]</td><td>Photoreceptor used in the product shall not intentionally contain: Cadmium (Cd), Lead (Pb), Mercury (Hg) and Selenium (Se)</td></tr>
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No	Environmental Criteria	Requirements
		compounds.
7	Limited number of materials[7]	**Plastic parts shall consist of:** One homopolymer or copolymer or polymer blends. This provision does not apply to components weighing less than 25 g each.
8	Identification of plastic parts[7]	**Plastic parts shall be labeled:** In accordance with ISO 11469. However, this need not apply to parts weighing less than 25 g, parts having flat surface area less than 200 mm^2 or reused plastic parts.
9	Styrene emission[7]	**Styrene emission shall not exceed:** A concentration of 0.07 mg/m3 in indoor air. The emission shall be measured under the test condition described in attachment 5 of Blue Angel (RAL-UZ62) or comparable test method.
10	Disassembly[7]	**The following requirements have to be fulfilled to ensure the product is easy to disassemble:** Modules shall be easily separable. There must be sufficient space to insert tools at fixing points/dismantling points. Joints between different materials must be easy to find. Non-separable joints such as glued or welded joints between different materials may not be used.
11	CFC not to be applied during the washing process[8]	**CFC** not to be applied during the washing process
12	Treatment of pollutants and industrial waste[9]	**Waste shall be:** sorted and the different fractions shall be recycled or disposed of in a controlled manner.
13	Packaging[9]	**Packaging shall not utilize:** Plastic polymers containing halogens. The solvents like CFCs, HCFCs, 1,1,1-trichloro-ethane and carbon tetrachloride included in the Montreal protocol shall not be used in the production of packaging. The product information shall be printed on chlorine-free recycled wasted-paper.
14	Information to be given on the package or manual[9]	**The following information shall be given on the package or manual:** User shall be informed about the proper handling of toner cartridge. Product instructions must include a note stating that toner cartridges must not be opened with force and if the toner dust escaped should not be inhaled or come in contact with skin. The product instructions must underline that they must be kept out of reach of children. The following technical information must be specified in the user's manual: 1. Proper procedure for use 2. Information on how the used cartridges be returned and collected.
15	All parts should be reusable[10]	**Cartridges shall consist of:** 75% in weight of recycled parts (weight of toner powder not included). Cartridges must be reusable at least 3 times for toner module by remanufacturing process.
16	Properties in use[10]	**Properties in use (such as print quality and toner capacity) of recycled cartridges shall be:** At least as good as a new original cartridge of the same type. The annual average proportion of complaints relating to EPP cartridges must not exceed 1%.
17	Toner transfer efficiency[10]	**Toner transfer efficiency of cartridges shall be:** High enough to eliminate the risk of toner leakage from the scavenger unit. Actual must be as high as the lowest theoretical. The annual average proportion of complaints relating to EPP must not exceed 1%.
18	Declaration of post-consumer recycled plastic content[11]	**Manufacturer declares** whether product contains postconsumer recycled plastic greater than 5.0% by weight measured as a percentage of total plastic by weight.

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19	Higher content postconsumer recycled plastic[11]	**Product shall contain** on average a minimum of 25% postconsumer recycled content plastic, measured as a percentage of total plastic by weight in the product**.**
20	Declaration of renewable/biobased plastic materials content[11]	**Manufacturer declares** whether product contains renewable / biobased plastic materials greater than 5.0% measured as a percentage of total plastic by weight in the product.
21	Minimum content of renewable/biobased plastic material[10]	**Product shall contain** on average a minimum of 10% renewable / biobased plastic measured as a percentage of total plastic by weight in the product.
22	Declaration of product weight[11]	**Manufacturer declares** product weight.
23	Identification of materials with special handling needs[11]	**Manufacturer shall** provide treatment information to reuse and recycling facilities that identifies the presence and location of materials that require special handling, especially nonstandard or new substances or new technologies.
24	Elimination of paints or coatings that are not compatible with recycling or reuse[11]	**Plastic parts** > 100 g on a product shall not contain paints or coatings that are not compatible with recycling or reuse, including metal coatings.
25	Identification and removal of components containing hazardous materials[11]	**Circuit boards** > 10 cm^2 measured on the largest face, batteries, and other components which contain hazardous materials shall be safely and easily identifiable and removable.
26	Availability of replacement parts[11]	**Spare parts** and/or compatible replacement parts shall be available five years after end of production. Information on how to obtain replacement parts shall be provided to user.
27	Separable packing materials material[11]	**All non-usable** packaging shall be separable. All packaging material shall be able to be segregated into like materials without the use of tools, i.e., need to be able to have all the cardboard separable from the foams that are separable from the plastic bags.
28	Provision of take-back program for packaging[11]	**Manufacturer shall** offer a take-back program for free where the packaging material can be collected/returned to manufacturer or recycler for reuse or recycling.
29	Documentation of reusable packaging[11]	**Manufacturer shall** provide a reusable packaging process that reuses the packaging for the same or similar product, at a competitive price. Manufacturer designs packaging for a minimum of 5 reuses.

1 Occupational Safety and Health Administration
2 www.oehha.ca.gov/index.html
3 International Agency for Research on Cancer
4 Center for Disease Control and Prevention
5 American College of Occupational and Environmental Medicine
6 Blue Angel (Germany) & Eco Mark (Japan)
7 Eco Mark (Japan)

8 Korea Eco-label
9 Nordic Swan (Nordic Countries) & Eco Mark (Japan)
10 Nordic Swan (Nordic Countries)
11 Electronic Product Environmental Assessment Tool (EPEAT)