

# The Catalog of “Encouraged Substitutes to Toxic and Hazardous Raw Materials (2012 draft)” by MIIT

Ver. 2012 (for public review and comment)

## > **What will this catalog be for?**

Since May 2012, Ministry of Industry and Information Technology of P.R.C. (MIIT) has declared that the information of substitutes for toxic, hazardous materials (products) should be notified by companies, industrial associations and institutes through provincial Technology and Information Department. The industries cover pharmacy, pesticide, leather, electronic products, painting etc. The submission of notification and expert review of application have been completed by the end of June 2012.

All notified materials (products) shall be divided into 3 categories according to specific progressive phases of development: **1)** the phase of research & development; **2)** the phase of materials (products) promoted for industrialization; **3)** the phase of materials (products) widely application. The definition of each of 3 categories is given as following:

- 1) **The phase of research & development:** non or lower toxic, hazardous materials (products) are in urgent need of being researched;
- 2) **The phase of materials (products) promoted for industrialization:** the research of non or lower toxic, hazardous materials (products) has been completed and the industrialization application demands some more time however ;
- 3) **The phase of materials (products) widely application:** those materials (products) are ready to be and encouraged for widely application.

After further research and review of all information of substitutes notified, the “Catalog of Toxic, Hazardous Materials (Products) and Recommended Substitutes” containing 79 toxic, hazardous materials (products) and substitutes correspondingly has been released for public review and comment before its final publication (till Nov 27 2012, usually half month for public review and comment).

## > **About the Catalog**

The Catalog covers the toxic, hazardous materials (products) that contain the substances mentioned as below.

Toxic, hazardous substances are referred to

- 1) heavy metal,
- 2) persistence organic pollutant (POPs),
- 3) Persistent toxic pollutants (PTS),
- 4) Products in the **list of Dangerous Goods(GB12268)**,
- 5) Chemicals in the **Catalog of Hazardous Chemicals** (over 3800 chemicals in the version

2002 issued by SAWS),

- 6) Materials in the **Inventory of national hazardous wastes** (by MEP),
- 7) Chemicals classified as extreme toxicity, serious corrosion, irritation, radiation (not including nuclear facilities and military nuclear installation), mutagenicity and carcinogenicity in the **inventory of Chinese highly Toxic Chemicals** (335 chemicals in the version 2002 issued by SAWS)

*The catalogs in green are available at the end of this article.*

### > The materials (products) catalog?

Index	Substitutes	toxic, hazardous materials (products)	Identified use
<b>1) The phase of research &amp; development</b>			
<b>1.1 Substitutes of Heave Metals</b>			
1	Color trivalent chromium passivation solution at room temperature	high concentration hexavalent chromium colour passivation solution	Galvanized passivation
2	boron nitride	beryllium oxide	microwave tube and high-power electron tube
3	catalyst containing mercury( mercury volume <4%) or mercury free catalyst	catalyst containing mercury(mercury volume between 10%-12.5%)	Acetylene method vinyl chloride synthesis
<b>1.2 Substitutes of Organic Pollutants</b>			
4	Biodegradable water-based ink	organic solvent ink	printing-packaging
5	water plastic gravure ink	organic solvent plastic gravure ink	food, pharmaceutical, plastic soft packing, intaglio printing
6	PFPE emulsifying agent	PFOA and its ammonium salt	fluorine-containing resin synthesis
7	derivative of PUFA surfactant	Alkylphenol ethers(APEO) surfactant	daily use chemicals、textile, etc.
8	none-PAHs aromatic oil	aromatic oil	rubber product
9	Finishing agent(water, oil, besmirch repellent) of Perfluorobutyl Fabric	(Perfluorooctyl sulfonyl fluoride) POSF	Textile products
<b>2) The phase of materials (products) promoted for industrialization</b>			
<b>2.1 Substitutes of Heave Metals</b>			
10	calcium phosphate anti-rust pigment	lead system, lead chromium system and zinc system anti-rust pigment	Anti-rust and anti-corrosive coating
11	trivalent chromium electroplate liquid	hexavalent chromium plating solution	Automobiles, electronic devices, machinery

Index	Substitutes	toxic, hazardous materials (products)	Identified use
12	zinc nickel alloy coating	cadmium coating	ship domain
13	None-lead free-cutting brass	lead-bearing free-cutting brass	non-ferrous metal smelting
14	Antimony white equivalent flame retardant for synthesis method use	antimonous oxide	high polymer flame retardant formula
15	lead storage battery containing new alloy of lead calcium	storage battery containing cadmium lead	application domain lead storage battery
16	None-chrome fireproofing tile	chrome fireproofing tile	high temperature furnace in industry of cement, steel, colored metal, etc.
17	stannous oxide	arsenious oxide	photoelectric display glass manufacture
<b>2.2 Substitutes of Organic Pollutants</b>			
18	none Alkylphenol ethers (APEO) architectural coatings emulsion	architectural coatings emulsion containing (Alkylphenol ethers ) APEO	exterior wall coating inside building
19	water-borne woodenware coatings	organic solvent wood coatings	wood furniture, home decoration
20	silane treating agent on metallic surface	Phosphating solution	metallic surface coating for automobile, household appliance, machinery manufacture, etc.
21	none-halogen flame retardant polypropylene material	flame retardant material containing bromine	Flame retardant polyolefin
22	wood wax oil woodware paint	polyurethane paint	interior decoration
23	water-based woodware paint for indoor use	polyurethane paint	interior decoration
24	casein glue	polyvinyl acetate emulsion	glue for industrial purposes
25	No benzene rubber	chloroprene rubber adhesive	glue for industrial purposes
26	water-soluble melamine resin glue	urea-formaldehyde glue, phenol glue	wood product adhesive
27	B dialdehyde urea formaldehyde glue	urea-formaldehyde glue	artificial board manufacture
28	Formaldehyde-free adhesive	Urea-formaldehyde	Wood-based panel production
29	High reactive lignin	Phenol	Phenolic material
30	water-borne polyurethane adhesives	Organic polyurethane solvent adhesive	Adhesive
31	Water-borne polyurethane leather and synthetic leather	Organic polyurethane solvent resin	Leather and synthetic leather producing

Index	Substitutes	toxic, hazardous materials (products)	Identified use
	coating resin		
<b>2.3 Substitutes of Pesticides</b>			
32	White mineral oil	Toluene, di-methylbenzenes	Emulsifiable concentrates processing
33	Turpentine -based oil solvent	Toluene, di-methylbenzenes	Emulsifiable concentrates processing
<b>2.4 Substitutes of other toxic, hazardous materials (products)</b>			
34	Material of Amoxicillin by enzymatic method	Material of Amoxicillin by chemical method	Amoxicillin API production
35	Cyanide-free and Formaldehyde-free Acidic Copper electroplating bath	Cyanide copper electroplating bath	Copper plating for Iron and steel
36	Fluorine-free demould oil repellent agent	Fluorine oil repellent agent	Industrial demould treatment
<b>3) The phase of materials (products) widely application</b>			
<b>3.1 Substitutes of Heave Metals</b>			
37	Tungsten-base alloy coating	Chromium coating	Oil exploitation
38	Trivalent chromium sulfate plating bath with high covering power	Hexavalent chromium plating bath	Military industry
39	Chromate-free passivation	Potassium dichromate	Passivation for Zinc plating
40	Lead-free Electronic paste	Lead electronic paste	Mixed-signal circuits, NTC, solar-battery
41	Li-Ion Battery	Lead-acid battery	Electric bicycle, electric tools
42	Gelled tube type lead-acid battery	Flooded tube-type lead-acid battery	reserve power supply
43	Mercury-free Alkaline zinc-manganese button cells	alkaline zinc-manganese button cells containing mercury	Battery production
44	Ni-MH battery	Nickel-cadmium battery	Electric tools, portable battery
45	Circular use adjuvant of Chrome tanning effluent	Trivalent chromium tanning agents	Leather producing
46	Ca/Zn composite stabilizer	Lead salt stabilizer	PVC products
47	Rare earth stabilizer	Lead salt stabilizer	PVC products
Index	Substitutes	toxic, hazardous materials	Identified use

		(products)	
48	Mercury catalyst(with 4%-6% of mercury chloride)	Mercury catalyst(with 10%-12.5% of mercury chloride)	Synthesis of vinyl chloride from acetylene
<b>3.2 Substitutes of Organic Pollutants</b>			
49	Waterborne coating for building with high level of staining resistant	Organic-solvent-based exterior wall coating	Exterior/interior wall coating
50	Waterborne elastic waterproofing coating	Waterproofing coating, such as organic solvent based polyurethane	Waterproof for building and reinforced concrete structure elements
51	Waterborne epoxy resins coating	Organic solvent based epoxy resins coating	The major film former of anticorrosion coating
52	Water-borne plastic coating	Organic-solvent-based plastic coating	Plastic products coating
53	UV curable coating	Organic solvent based coating	Wooden-furniture, plastic and paper products, automobile and powder coating
54	Waterborne industrial coating	Organic solvent based industrial coating	Industrial product coating
55	waterborne polyurethane	The organic solvent-based resin	Coatings, adhesives , dyes and oil
56	Ester solvents	Xylenes solvent	coating solvents, coating thinners, pesticides solvents and metal cleaners
57	Waterborne alkyd resin	Solvent-based alkyd resin	Painting products
58	Alcohol ester type	Solvent-based painting ink containing Benzene & ketone	Printing of plastic films and composites
59	UV-curable ink	Solvent - based inks	Printing and Packaging
60	Solvent-free polyurethane adhesives	Solvent-based polyurethane adhesives	Food, daily chemicals packaging
61	hydrotalcite	Halogen brominated flame retardants, Lead stearate	Polymer flame retardant
62	Wood Plastic Composites	Wood hardboard	Internal and external decoration
63	Crop straw board	hardboard containing formaldehyde	Furniture , building materials , decoration , packaging materials
64	Chlorine dioxide	liquefied chlorine	paper manufacturing
<b>Index</b>	<b>Substitutes</b>	<b>toxic, hazardous materials</b>	<b>Identified use</b>

		(products)	
65	Alkyl citrates plasticizers	Phthalate plasticizers	Medical equipment, food packaging , toys for kids
66	aqueous dispersion for synthetic leather	Organic solvent-based color paste	Synthetic leather dyeing
<b>3.3 Substitutes of Pesticides</b>			
67	Plant source pesticide synergist	Chemical synthesis synergist	various types of pesticide formulations for the use of foliar spray
68	C23-29 Paraffinic solvents	Toluene, xylene solvent	Pesticides EC & aqueous emulsion processing
69	Petroleum ether	Xylene	A fork method on acetochlor synthesis
70	pirimiphos-methyl	aluminium phosphide	Grain storage pest control
71	Insect virus pesticides	highly-toxic insecticide	Lepidopteran pest control
72	TDS	SODIUM PENTACHLOROPHENOLATE	Oncomelania (Schistosome host) prevention
73	niclosamide	SODIUM PENTACHLOROPHENOLATE	Oncomelania (Schistosome host) prevention
74	Metaldehyde	SODIUM PENTACHLOROPHENOLATE	Oncomelania (Schistosome host) prevention
<b>3.4 Substitutes of other toxic, hazardous materials (products)</b>			
75	$\beta$ - Hydroxyalkylamide curing agent	Isocyanurate Triglycidyl (TGIC)	firming agent of Weather resistant powder coatings
76	Monohydrate citric acid , potassium bis ( alloy of malononitrile (I ))	potassium gold cyanide	gilt
77	(Rubber accelerator) ZBDC	Rubber vulcanization accelerator PZ	Rubber products
78	(Rubber accelerator) TBzTD	Rubber vulcanization accelerator TMTD	Rubber products
79	High strength and high modulus polyvinyl alcohol (PVA) fibers	asbestos	Cement components and interior decoration materials

### > About the catalog:

The document is prepared by the “[China Chemical Legislation Professionals](#)” group on LinkedIn. This group is a sub-group of REACH24H Consulting Group, which aims at “*helping to establish a professional network where experts who hold EHS or regulatory backgrounds could achieve the most updated information of chemical legislation and enforcement in China, exchanging practical compliance experience, finding answers to tough cases and also benefiting from valuable learning materials shared*”. Topics would be expected to cover regulations over:

- 1) new chemical (China REACH),
- 2) hazardous chemical (China GHS),
- 3) Toxic chemicals and precursor chemicals
- 4) cosmetics,
- 5) pharmaceutical products,
- 6) agrochemical products
- 7) related environment laws

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[http://www.linkedin.com/groups?gid=4643707&trk=myg\\_ugrp\\_ovr](http://www.linkedin.com/groups?gid=4643707&trk=myg_ugrp_ovr)

#### > **Source**

Original news site:

<http://www.miit.gov.cn/n11293472/n11505629/n11506364/n11513631/n11513880/n11927781/14992606.html>

For the original catalog in Chinese could be downloaded here:

<http://www.miit.gov.cn/n11293472/n11293832/n12845605/n13916913/n14993436.files/n14992595.doc>

Relevant documents and catalogs and inventory:

Catalog Name	Language	Download
list of Dangerous Goods(GB12268)	Chinese	<a href="https://www.box.net/shared/zv4zc509boilj7ak4w8a">https://www.box.net/shared/zv4zc509boilj7ak4w8a</a>
	English	<a href="http://chemlinked.com/en/regulatory/regulatory-database#category=441&amp;guid=877">http://chemlinked.com/en/regulatory/regulatory-database#category=441&amp;guid=877</a>
Inventory of national hazardous wastes	Chinese	<a href="http://www.mep.gov.cn/gkml/hbb/bl/200910/W020080617312803614193.pdf">http://www.mep.gov.cn/gkml/hbb/bl/200910/W020080617312803614193.pdf</a>
Catalog of Hazardous Chemicals (ver.2002)	English	<a href="https://www.box.net/shared/zv7i90rctaqqfj4ckgy">https://www.box.net/shared/zv7i90rctaqqfj4ckgy</a>
inventory of Chinese highly Toxic Chemicals (ver.2002)	Chinese	<a href="https://www.box.net/shared/murg70bh15zp2yrey6dw">https://www.box.net/shared/murg70bh15zp2yrey6dw</a>
	English	<a href="http://chemlinked.com/en/regulatory/regulatory-database#category=443&amp;guid=338">chemlinked.com/en/regulatory/regulatory-database#category=443&amp;guid=338</a>