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**DENR ADMINISTRATIVE ORDER**  
**2019 - 18**

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**SUBJECT : POLYMERS AND POLYMER OF LOW CONCERN (PLC)  
EXEMPTION FROM THE PRE-MANUFACTURE AND  
PRE-IMPORTATION NOTIFICATION (PMPIN) PROCESS**

Pursuant to Section 11 (Item C) of Republic Act 6969 (Toxic Substances and Hazardous and Nuclear Waste Control Act) and Section 22, Chapter VI of DENR Administrative Order (DAO) No. 29, Series of 1992 (Implementing Rules and Regulations of RA 6969), this Order provides the criteria and requirements for the exemption of Polymers and Polymers of Low Concern (PLC) from the Pre-Manufacture and Pre-Importation Notification (PMPIN) process.

### **SECTION 1. OBJECTIVE**

This Order aims to provide guidelines for granting PMPIN exemption to importers and manufacturers of Polymers and PLC.

### **SECTION 2. SCOPE AND COVERAGE**

This Order shall apply to Polymers and PLC not listed in the Philippine Inventory of Chemicals and Chemical Substances (PICCS).

### **SECTION 3. DEFINITION**

- a. Applicant – Any natural or juridical person that are registered to import and/or to manufacture new Polymer.
- b. Bureau – refers to the Environmental Management Bureau.
- c. Cationic Polymer – a Polymer containing a net positively-charged atom/s or associated group/s of atoms covalently linked to its Polymer molecule. Examples are the ammonium, phosphonium and sulfonium cations.
- d. Dalton (Da) - precisely 1.0000 atomic mass unit or 1/12 the mass of a carbon atom of mass 12. Hence, a polymer with a molecular weight of 10,000 atomic mass units has a mass of 10,000 daltons.
- e. Functional Group Equivalent Weight (FGEW) – as the ratio of the Number Average Molecular Weight (NAMW) to the number of functional groups in the Polymer. It is the weight of a Polymer that contains one formula weight of the functional group.
- f. Reactive Functional Group (RFG) – an atom or associated group of atoms in a chemical substance that is intended or can be reasonably anticipated to undergo facile chemical reaction. RFG are categorized into low-concern, moderate concern and high concern (see Annex I for the list).
- g. Low-Concern RFG – are the RFGs that may be used without limits.

- h. Moderate-Concern RFG – are the RFGs that has a combined (total) reactive group equivalent weight or FGEW greater than or equal to 1,000 Da.
- i. High-Concern RFG – are the RFGs that has a combined (total) reactive group equivalent weight or FGEW greater than or equal to 5,000 Da.
- j. NAMW – as the arithmetic mean average of the molecular weight of all the molecules in a Polymer, not taking into account unreacted monomers and other reactants but must include oligomers.
- k. Gel Permeation Chromatography (GPC) – is an analytical technique that separates dissolved macromolecules by size based on their elution from columns filled with a porous gel. It can measure absolute molecular weight, molecular size and intrinsic viscosity, and generate information on macromolecular structure, conformation, aggregation and branching.
- l. Infrared (IR) Spectroscopy – is the analysis of infrared light interacting with a molecule. IR Spectroscopy measures the vibrations of atoms, and based on this it is possible to determine the functional groups.
- m. Molecular Weight (MW) – is the mass of a molecule of an element or compound.
- n. Monomer – molecule that has reactive functional groups or double/triple bonds capable to forming a Polymer. A chemical substance that is capable of forming covalent bonds with two or more like or unlike molecules under the conditions of the relevant Polymer-forming reaction used for the particular process.
- o. New Monomer – monomers not listed in the PICCS.
- p. Reactant – a chemical substance that is used intentionally in the manufacture of a Polymer to become chemically part of the Polymer composition (see Annex II for the list).
- q. Oligomer - a low molecular weight species derived from the polymerization reaction. In this policy, it refers to molecules with MW lower than 1000 Da and MW lower than 500 Da.
- r. Person or persons – any being natural or juridical, susceptible of rights and obligations or of being the subject of legal regulations.
- s. Polymer – (1) means a substance consisting of molecules characterized by the sequence of one or more types of monomer units and comprising a simple weight majority of molecules containing at least three monomer units which are covalently bound to at least one other monomer unit or other reactant and consists of less than a simple weight majority of molecules of the same molecular weight. Such molecules must be distributed over a range of molecular weights wherein differences in the molecular weight are primarily attributable to differences in the number of monomer units; (2) is a substance composed of more than 50% of molecules containing a sequence of at least three monomer units covalently bound to at least one other monomer unit or other reactant; (3) has molecules distributed over a range of MW; and (4) has no single MW molecule reaching 50% (w/w) of total molecules.
- t. Polymer of Low Concern (PLC) – (a) must meet the definition of Polymers; (b) must meet criteria under Section 4.4.a or Section 4.4.b; and (c) must not be unstable, degradable, decompose, or depolymerize.

#### **SECTION 4. CRITERIA FOR POLYMER EXEMPTION FROM PMPIN PROCESS**

The Polymer should meet any of the following criteria:

1. All of its monomers must be listed in the PICCS.
2. Polymers containing monomers and other reactants (including crosslinking, chain transfer agents, and post polymerization reactants) not in the PICCS added at quantities less than 2 percent (by weight).
3. A new Polymer if two or more of the top (top by weight) monomers are included in the definition of another Polymer already in PICCS.
4. The PLC shall fall into one of the conditions:
  - a. Polymers that have:
    - Number Average Molecular Weight (NAMW) equal to or greater than 10,000 Da,
    - Less than 5% of oligomers with MW lower than 1,000 Da and less than 2% of oligomers with MW lower than 500 Da, and
    - For cationic Polymers, the FGEW should be greater than 5,000 Da.
  - b. Polymers that have:
    - NAMW equal to or greater than 1000 Da and less than 10,000 Da,
    - Less than 25% of oligomers with MW lower than 1,000 Da and less than 10% of oligomers with MW lower than 500 Da, and
    - No RFGs in excess of the levels of 2% by weight.

#### **SECTION 5. REQUIREMENTS FOR APPLICATION**

1. Duly accomplished and notarized Polymer Exemption form.
2. Polymer information like specific chemical name, chemical structure, Chemical Abstract Service (CAS) number (if available), use/s of the Polymer.
3. Safety Data Sheet (SDS) for the Polymer alone or the mixture/product where the Polymer is part of the ingredients.
4. 100% composition of the Polymer including CAS numbers of monomers and other reactants.
5. Data requirements that show proof that the Polymer meets any of the conditions stated in Section 4 (GPC Data, IR Spectroscopy and other techniques).
6. Request for Confidential Business Information (CBI) through an official letter with justification.
7. Processing fee amounting to Php 1,500.00.

The Bureau shall process the Polymer Exemption application within twenty (20) working days from receipt of the complete documentary requirements.

The exempted Polymer will not be listed in the PICCS.

#### **SECTION 6. TRANSITORY CLAUSE**

All polymer exemption previously granted are no longer subject to this policy. Polymers that do not meet the PLC criteria should comply with the PMPIN process.

#### **SECTION 7. PENALTY CLAUSE**

Any misrepresentation, misinformation, misstatement, fabrication and falsification of submitted information will automatically cause the issuance of the Polymer Exemption to be revoked and the applicant shall be subjected to the penalty provision.

Any person/s found violating any of the provisions specified in this Order shall be subject to administrative violations and fines under Section 15 of R.A. 6969, as well as Section 43, Chapter XII, title V of DAO 29, Series of 1992 and other existing pertinent laws.

#### **SECTION 8. SEPARABILITY CLAUSE**

If any portion or provision of this Order is declared unconstitutional or invalid, the remaining portions of this Order shall remain valid and enforceable.

#### **SECTION 9. EFFECTIVITY**

This Administrative Order shall take effect fifteen (15) days after its publication in a newspaper of general circulation and upon acknowledgement of receipt of a copy thereof by the Office of the National Administrative Register (ONAR), UP Law Center.

  
**ROY A. CIMATU**  
Secretary



## ANNEX I

### LIST OF RFGs

#### **Low Concern RFGs: No Limit**

Carboxylic acids

Aliphatic hydroxyls

Olefins:

- Unconjugated (except those in naturally occurring oils and acids)
- Unactivated (part of a larger group such as vinyl ether)

Blocked isocyanates (including ketoximes)

Thiols

Nitriles (unconjugated)

Halogens (except active e.g., benzylic or allylic)

#### **Moderate Concern RFGs: FGEW must be $\geq 1000$ Da**

Acid halides

Acid anhydrides

Aldehydes

Alkoxysilanes (alkyl > C2)

Allyl ethers

Conjugated olefins

Cyanates

Epoxides

Hemiacetals

Hydroxymethylamides

Imines

Methylolamides

Methylolamines

Methylolureas

Unsubstituted position ortho- or para- to phenolic hydroxyl

#### **High Concern RFGs: FGEW must be $\geq 5000$ Da**

Acrylates (pendant)

Alkoxysilanes (alkyl = C1 or C2)

Amines

Aziridines

Carbodiimides

Halosilanes

Halosilanes

Hydrazines

Isocyanates

Isothiocyanates

$\alpha$  and  $\beta$ -Lactones

Methacrylates (pendant)

Vinyl sulfones

Note: If a RFG is not explicitly listed as low, medium or high concern you must assume it is high concern with FGEW  $\geq 5000$ .

## ANNEX II

### LIST OF REACTANTS

1	<b><i>Monobasic Acids and Natural Oils</i></b>	
	65-85-0	Benzoic acid
	111-14-8	Heptanoic acid
	112-05-0	Nonanoic acid
	142-62-1	Hexanoic acid
	143-07-7	Dodecanoic acid
	3302-10-1	Hexanoic acid, 3,3,5-trimethyl-
	8001-20-5	Tung oil *
	8001-21-6	Sunflower oil *
	8001-22-7	Soybean oil *
	8001-23-8	Safflower oil *
	8001-26-1	Linseed oil *
	8001-29-4	Cottonseed oil *
	8001-30-7	Corn oil *
	8001-31-8	Coconut oil *
	8002-50-4	Oils, menhaden *
	8016-35-1	Oils, oiticica *
	8023-79-8	Oils, palm kernel *
	8024-09-7	Oils, walnut *
	61788-47-4	Fatty acids, coco *
	61788-66-7	Fatty acids, vegetable oil *
	61789-44-4	Fatty acids, castor oil *
	61789-45-5	Fatty acids, dehydrated castor oil *
	61790-12-3	Fatty acids, tall-oil *
	67701-08-0	Fatty acids, C16-18 and C18-unsaturated *
	67701-30-8	Glycerides, C16-18 and C18-unsaturated *
	68132-21-8	Oils, perilla *
	68153-06-0	Oils, herring *
	68308-53-2	Fatty acids, soybean oil *
	68424-45-3	Fatty acids, linseed oil *
	68649-95-6	Linseed oil, oxidized *
	68953-27-5	Fatty acids, sunflower oil, conjugated *
	84625-38-7	Fatty acids, sunflower oil *
	91078-92-1	Oils, babassu palm *
	93165-34-5	Fatty acids, safflower oil *
	93334-41-9	Oils, sardine *
	120962-03-0	Oils, glyceridic, canola *
	128952-11-4	Oils, anchovy *
	N/A	Fatty acids, tall-oil, conjugated *
	N/A	Oils, cannabis *
2	<b><i>Dibasic and Tribasic Acids and Esters</i></b>	
	88-99-3	1,2-Benzenedicarboxylic acid
	100-21-0	1,4-Benzenedicarboxylic acid

106-65-0	Butanedioic acid, dimethyl ester
106-79-6	Decanedioic acid, dimethyl ester
110-15-6	Butanedioic acid
110-17-8	Fumaric acid
110-40-7	Decanedioic acid, diethyl ester
110-94-1	Pentanedioic acid
111-16-0	Heptanedioic acid
111-20-6	Decanedioic acid
120-61-6	1,4-Benzenedicarboxylic acid, dimethyl ester
121-91-5	1,3-Benzenedicarboxylic acid
123-25-1	Butanedioic acid, diethyl ester
123-99-9	Nonanedioic acid
124-04-9	Hexanedioic acid
141-28-6	Hexanedioic acid, diethyl ester
505-48-6	Octanedioic acid
528-44-9	1,2,4-Benzenetricarboxylic acid
624-17-9	Nonanedioic acid, diethyl ester
627-93-0	Hexanedioic acid, dimethyl ester
636-09-9	1,4-Benzenedicarboxylic acid, diethyl ester
693-23-2	Dodecanedioic acid
818-38-2	Pentanedioic acid, diethyl ester
1119-40-0	Pentanedioic acid, dimethyl ester
1459-93-4	1,3-Benzenedicarboxylic acid, dimethyl ester
1732-08-7	Heptanedioic acid, dimethyl ester
1732-09-8	Octanedioic acid, dimethyl ester
1732-10-1	Nonanedioic acid, dimethyl ester
1852-04-6	Undecanedioic acid
61788-89-4	Fatty acids, C18-unsaturated, dimers *
3	<b>Polyols</b>
56-81-5	1,2,3-Propanetriol
57-55-6	1,2-Propanediol
77-85-0	1,3-Propanediol, 2-(hydroxymethyl)-2-methyl-
77-99-6	1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)-
105-08-8	1,4-Cyclohexanedimethanol
107-21-1	1,2-Ethandiol
107-88-0	1,3-Butanediol
110-63-4	1,4-Butanediol
111-46-6	Ethanol, 2,2'-oxybis-
115-77-5	1,3-Propanediol, 2,2-bis(hydroxymethyl)-
126-30-7	1,3-Propanediol, 2,2-dimethyl-
144-19-4	1,3-Pentanediol, 2,2,4-trimethyl-
629-11-8	1,6-Hexanediol
2163-42-0	1,3-Propanediol, 2-methyl-
25119-62-4	2-Propen-1-ol, polymer with ethenylbenzene
25618-55-7	1,2,3-Propanetriol, homopolymer
4	<b>Modifiers</b>
71-36-3	1-Butanol **
80-04-6	Cyclohexanol, 4,4'-(1-methylethylidene)bis-

108-93-0	Cyclohexanol
110-99-6	Acetic acid, 2,2'-oxybis-
111-27-3	1-Hexanol
112-34-5	Ethanol, 2-(2-butoxyethoxy)-
13393-93-6	1-Phenanthrenemethanol, tetradecahydro-1, 4-a-dimethyl-7-(1-methylethyl)-
25036-25-3	Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis (4,1-phenyleneoxymethylene)]bis [oxirane] *
68037-90-1	Silsesquioxanes, phenyl propyl *
68440-65-3	Siloxanes and silicones, dimethyl, diphenyl, polymers with phenyl silsesquioxanes, methoxy-terminated *
68957-04-0	Siloxanes and silicones, dimethyl, methoxy phenyl, polymers with phenyl silsesquioxanes, methoxy-terminated *
68957-06-2	Siloxanes and silicones, methyl phenyl, methoxy phenyl, polymers with phenyl silsesquioxanes *
72318-84-4	Methanol, hydrolysis products with trichlorohexylsilane and trichlorophenylsilane *

\* - Chemical substance of unknown or variable composition, complex reaction products and biological materials (UVCB).

\*\* - This substance may not be used in a substance manufactured from fumaric or maleic acid because of potential risks associated with esters, which may be formed by reaction of those reactants.