

# Introduction to PRTR

**Korea Chemicals Management Association**

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- I** Substance selection and computation of handling volume
- II** Emission and movement computation
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## I . Substance selection and computation of handling volume

### 1. Purpose and contents

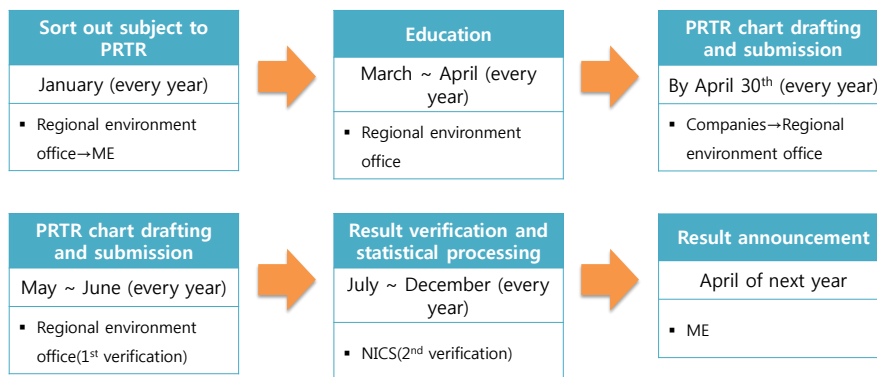
#### ▪ Purpose

- For companies to self understand volume of emission to environment(air, water and soil) from the chemicals they manufacture or use and minimize environmental pollution and enhance production by reducing emission and emission loss of products or raw material
- Like as OECD PRTR, USA TRI, Canada NPRI, UK PI, various countries conduct PRTR in various ways

#### ▪ Legal basis

- Chemicals Control Act Article 11, enforcement decree article 6 and enforcement rule article 5.
- ME notification 2014-255 (Chemical PRTR and coefficient computation)

## 2. PRTR timeline



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## 3. Purpose and contents

### ▪ Subject to PRTR

1. Hazard chemical substances
2. Chemicals and volatile organic substance according to Clean air conservation act.
3. Chemicals according to Clean water conservation act.
4. Designated as carcinogenic, mutagenic and toxic to reproduction by international organizations and prescribed by Ordinance of Minister of Environment for human and environment protection

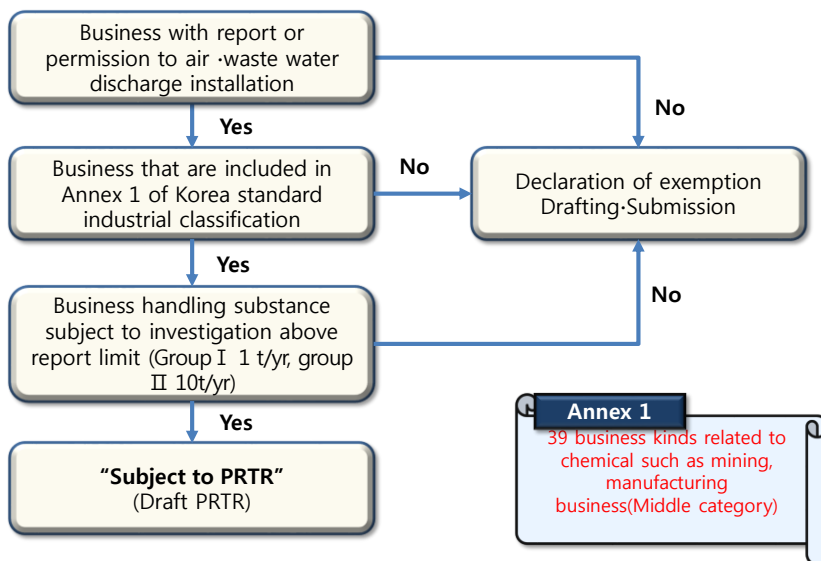
↳ **Subject substances 415 kinds (Group I : 20 kinds, Group II: 395kinds)**

### ▪ Investigation contents

- Business general status and yearly handling volume (manufacture and use)
- Volume of chemicals discharged into air, water and soil
- Chemicals contained in waste water and consigned for processing

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## 4. How to confirm business subject to PRTR



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## 5. Exemption to PRTR

### ➤ Subject to PRTR

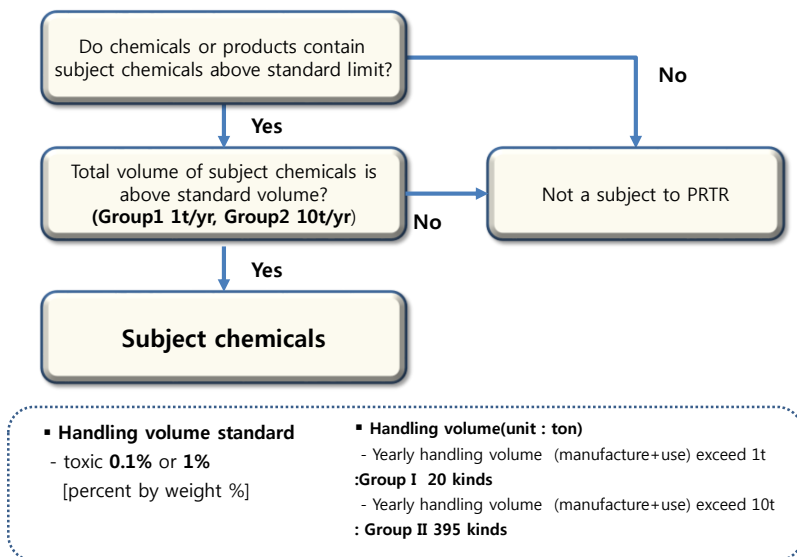
1. chemicals and products produces within business
2. Raw materials and additives used within business(all chemicals contained in products directly or chemical rxn such as assistive material, rxn gas)
3. Process aid substance that are used within business(chemicals that are not contained but used for production process such as catalyst, separating medium, cleaning agent and etc.
4. Chemicals stored and storing within business(contain chemicals that are stored in an warehouse for transport and etc. )
5. Waste that are disposed at waste disposal business(chemicals contained in the process of incineration, landfill, recycle)
6. other chemicals(chemicals used in waste water treatment and to maintain and repair business facility and equipment)

### ➤ Exemption to PRTR

1. chemicals used only for study, research or examination that are used in limited places with limited people
2. Chemicals built in equipment, device that are purchased with storage battery
3. Chemicals that are part of business equipment such as paint for painting and construction materials
4. Chemicals used for operation and maintenance of equipment operated by business
5. Chemicals that are personally used by employee such as office devices, medicine and cosmetics
6. Chemicals used for maintaining business landscape facilities such as insecticide, fertilizers
7. chemicals that are heavy metals and its compound that are solid, keep its natural form when treated and do not fuse, vaporate or dissolve

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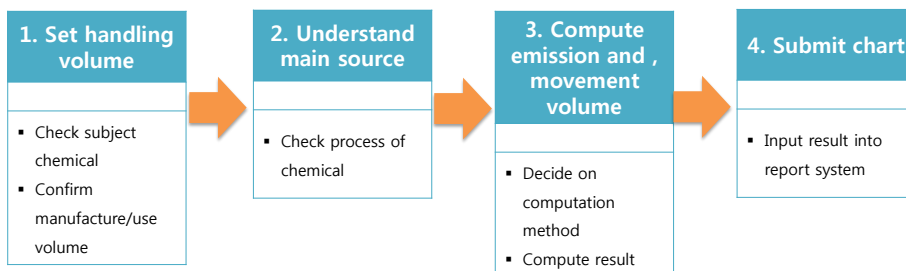
## 6. How to confirm subject substance



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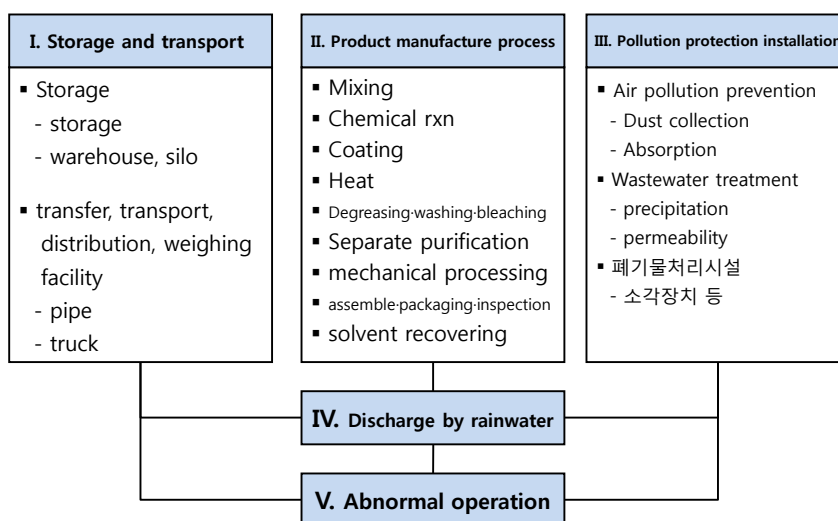
## II. Emission and movement computation

## 1. PRTR computation process



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## 2. Sources for each process



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### 3. Definition

- **Generation volume**
  - Volume of chemicals generated as air, water and soil pollutant, waste or wastewater during processing (preliminary phase of PRTR computation)
  - Report should be made as emission volume considering rate of removal and capture, since different operation of pollutant prevention facility lead to different emission.
- **Emission volume**
  - Volume of chemicals directly discharged or discharged by passing through pollution prevention facility into environment such as air, soil and water
- **Transport volume**
  - Volume of chemicals transported to waste disposal facility or wastewater treatment by consigned processing
- **Self landfill volume**
  - Volume of chemicals buried in managed or cut off type landfill within the place of business

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### 4. How to compute emission volume\_ computation method

- **Direct computation**
  - Compute PRTR by measuring direct emission volume(flux and concentration)
  - Efficient to compute PRTR for chimney, **waste water treatment**, waste fluid and waste
- **Material balanced**
  - Compute using the law of conservation of mass, mass balance system
  - Compute PRTR for specific process(PRTR source)
- **Emission coefficient**
  - Apply average PRTR coefficient at specific facility to similar PRTR source (coefficient : rate of emission compare to handling volume)
  - Efficient for pipe system such as scattering source(valve, flange, pump and compression)
- **Engineering computation**
  - Computation using physico-chemical properties(vapor, solubility, diffusion coefficient and etc.), pollution prevention properties(removal rate, efficiency)
  - Efficient for storage facility where PRTR computation is complicated (use computation program)

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## 5. How to compute emission volume\_ PRTR

- **PRTR to air**

- PRTR volume discharged into air through source pollution point(compulsion exhaust system) and fugitive sources

- **PRTR to water**

- PRTR volume discharged into public water after treated in water waste facility, storm water, accident and etc.

- ⇒ "Transport volume" is transporting to outside wastewater discharge and sewage treatment

- **PRTR to soil**

- PRTR volume discharged into soil due to leakage from handling facility, accident and negligenc

- **Self landfill volume**

- Volume of chemicals buried in managed or cut off type landfill within the place of business

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## 5. How to compute emlssion volume\_ Transport volume

- **Transport volume to waste water treatment facility**

- when transporting to waste water, joint prevention facility and sewage treatment (only when transported by external source

- ⇒ volume transported contained in waste water (kg)

- ⇒ volume of waste water transported into waste water facility (ton)

- **Transport volume to waste treatment companies**

- When transporting chemicals consigned to outer company

- ⇒ volume of subject chemicals transported as part of waste(kg)

- ⇒ volume of subject chemicals transported to waste treatment company(ton)

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### III. Status of PRTR investigation

#### 1. Yearly PRTR

		2014	2015	2016	
<b>Criteria</b>	Business	39	39	39	
	Chemicals	415	415	415	
<b>Result</b>	Business	3,524	3,634	3,732	
	Chemicals(kinds)	226	226	228	
	Tonnage(ton)	163,618,200	172,119,501	192,184,692	
	PRTR (kg)	Total	54,261,120	53,732,487	57,247,558
		Air	53,994,031	53,486,177	56,825,187
		Water	267,088	246,310	422,372
		Soil	0	0	0
	PRTR rate (PRTR/handling volume, %)	0.0332	0.0312	0.0298	
	Self landfill(kg)	8,012,207	8,199,044	15,448,067	
	Consigned (transport volume) (kg)	Total	872,448,118	864,384,048	833,411,952
		Waste water	111,178,007	105,040,277	85,406,730
		Waste	761,270,111	759,343,771	748,005,222
	Consigned rate (Consigned/volume, %)	0.533	0.502	0.434	

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## IV. Emission reduction plan

### 1. Backgrounds

#### ▪ Backgrounds

- The PRTR results are open to public every year but business efforts to reduce emission of high hazard chemicals such as carcinogenic and etc
- Need to obligate companies with high volume of high hazard chemicals to establish emission reduction plan

#### ▪ Contents

- A person who discharge chemicals with high hazard more than certain volume among business subject to PRTR, should draft and submit chemical emission reduction plan once in every five years.

#### ▪ Legal basis

- CCA Article 11 clause 2(19. 11. 29 enforcement date)