

CURSO  
POLLUTION CONTROLS FOR HAZARDOUS  
AND OTHER SUBSTANCES

JICA -OSAKA  
2006

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EINP

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# PROGRAMA DO CURSO

- APRENDER SOBRE A HISTÓRIA DA POLUIÇÃO POR SUBSTÂNCIAS PERIGOSAS
  - APRENDER SOBRE EFEITOS À SAÚDE HUMANA PELA CONTAMINAÇÃO
  - CONTROLE PELOS GOVERNOS LOCAIS E LEGISLAÇÃO
  - MÉTODOS DE DETECÇÃO DE FONTES DE POLUIÇÃO
  - TÉCNICAS RELACIONADAS A PROMOÇÃO DOS 3R
  - TECNOLOGIAS DE TRATAMENTO DE RESÍDUOS, EFLUENTES E EMISSÕES POR MEIO DE VISITAS EM INDÚSTRIAS
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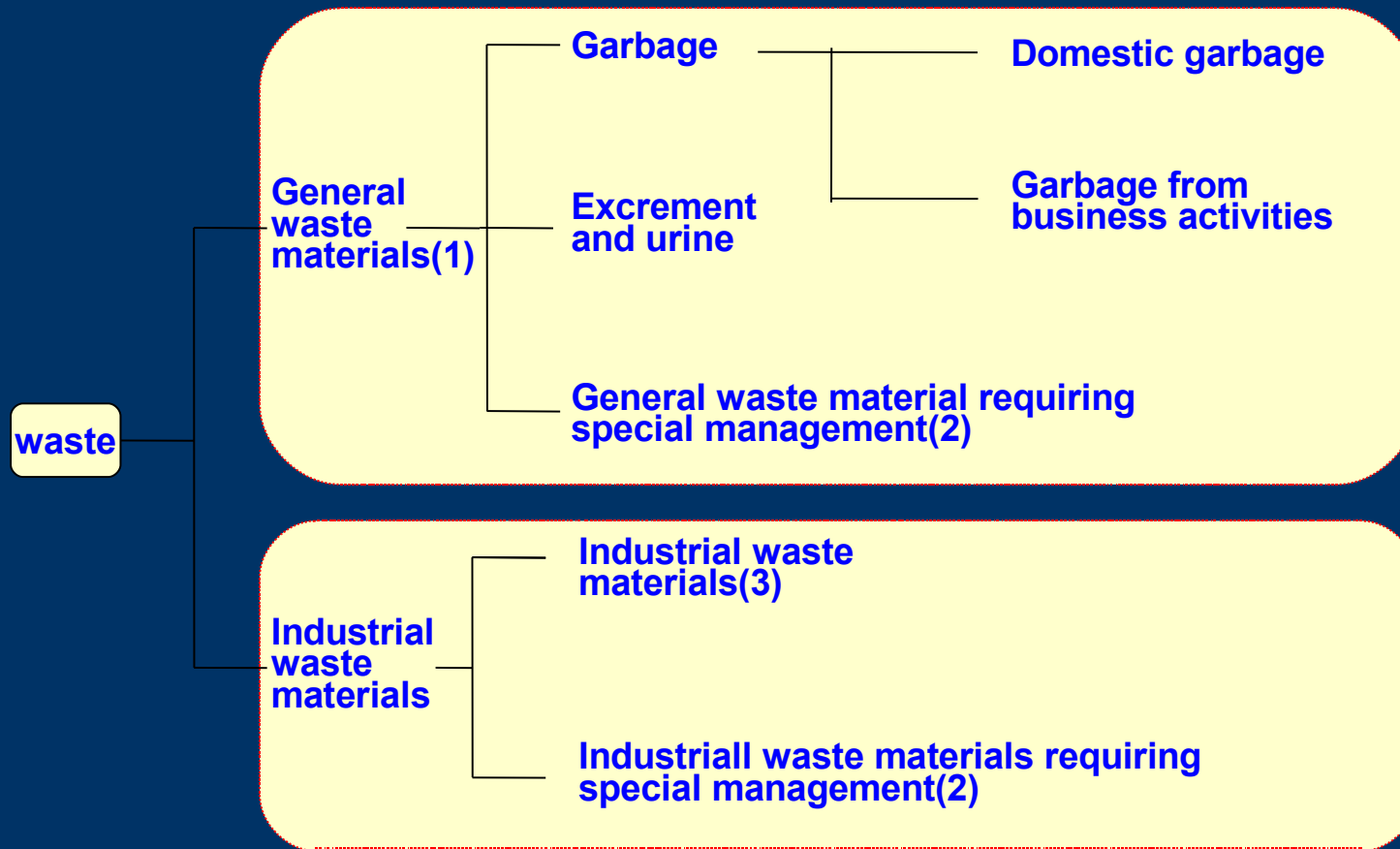
# OSAKA PREFECTURE



# LEGISLAÇÃO

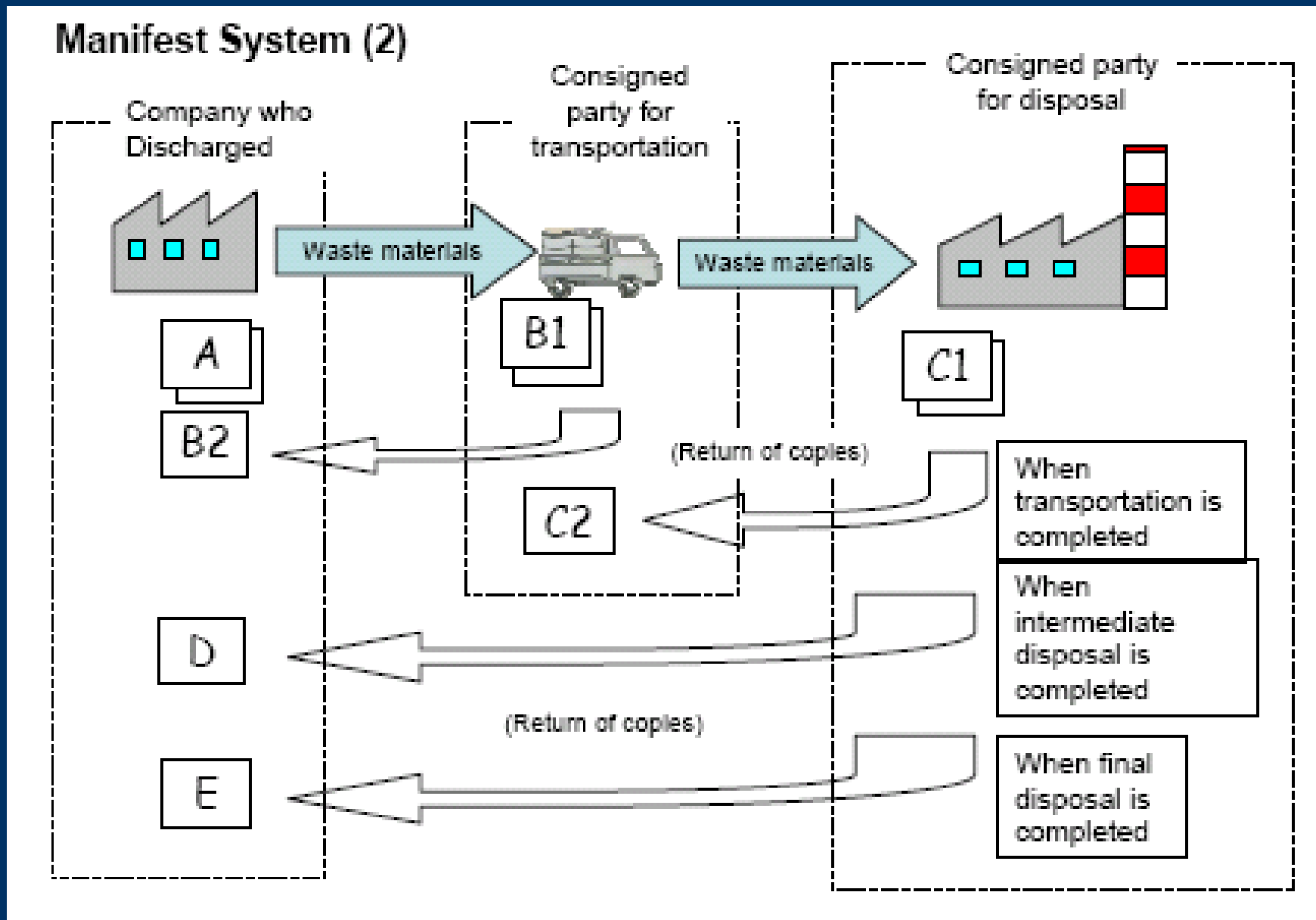
- Environmental basic Law (1993)
  - Air Pollution Control Law
  - The law for the promotion of a Basic Recycling-oriented Society.
  - Water Pollution Control Law (1970)
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# RESÍDUOS



- 1 – waste materials other than the industrial waste materials
- 2- general or industrial waste materials with harmful properties such as explosive, toxic, infections etc
- 3- industrial waste materials resulting from business activities such as cinders, sludge, waste plastics, waste woods, waste metals, rubble, dust etc

# MANIFESTO PARA RESÍDUOS



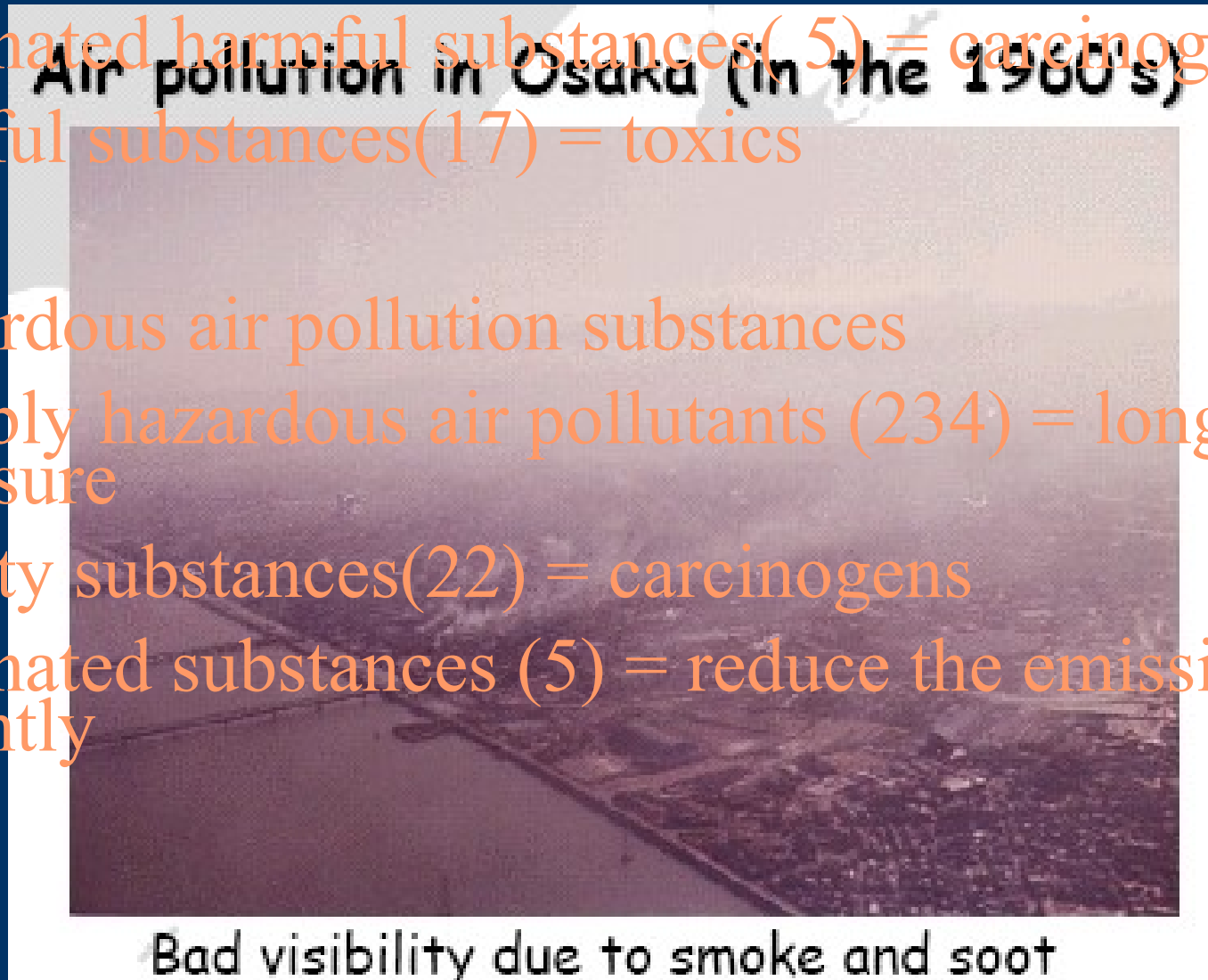
# AR

- Osaka Prefecture

- designated harmful substances (5) = carcinogens
- harmful substances (17) = toxics

- Hazardous air pollution substances

- possibly hazardous air pollutants (234) = long term exposure
- priority substances (22) = carcinogens
- designated substances (5) = reduce the emission urgently



Substances	Regulated by the		Hazardous air pollution substances	
	Designated ordinance	Harmful	Priority	Designated
Acetaldehyde			X	
Acrylonitrile			X	
Anisidine		X		
Antimony and its compounds(Sb)		X		
Arsenic and its compounds(As)	X		X	
Benzene	X		X	X
Benzo-(a)-pyrene			X	
Beryllium and its compounds(Be)		X	X	
1,3-Butadiene			X	
Bromine(Br <sub>2</sub> )		X		
Cadmium and its compounds(Cd)		X		
Chromium hexa and its compounds( Cr VI)	X		X	
Chlorine(Cl <sub>2</sub> )		X		
Chloroethylene	X			
Chloroform			X	
Chloromethylmethylether			X	
Chloronitrobenzene		X		
Copper and its compounds(Cu)		X		
1,2-Dichloroethane			X	
Dichloromethane			X	X
Dioxins			X	X
N-Ethylaniline		X		
Ethylene oxide			X	
Formaldehyde		X	X	
Hydrogen chloride(HCl)		X		
Lead and its compounds(Pb)		X		
Manganese and its compounds(Mn)		X	X	
N-Methylaniline		X		
Mercury and its compounds(Hg)		X	X	
Nickel compounds(Ni)	X		X	
Phosgene(COCl <sub>2</sub> )		X		
Talc			X	
Tetrachloroethylene			X	X
Trichloroethylene			X	X
Vanadium and its compounds(V)		X		
Vinyl chloride monomer			X	





- 31 estações de monitoramento – Osaka Prefecture
  - 94 estações de monitoramento municipais
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# ÁGUA

- + 95 % Osaka Prefecture com rede de esgotos
  - Environmental quality standards
    - toxic substances – para todas as águas
    - living environment items – rios e águas específicos, de acordo com o uso ( 73 corpos d'água dos 171 existentes)
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## Toxic substances

Substances	Standards
Cadmium	0,01 mg/liter or less
Total cyanogen	Not detectable
Lead	0,01 mg/liter or less
Chromium(VI)	0,05 mg/liter or less
Arsenic	0,01 mg/liter or less
Total mercury	0,0005 mg/liter or less
Alkyl mercury	Not detectable
PCB	Not detectable
Dichloromethane	0,02 mg/liter or less
Carbon tetrachloride	0,002 mg/liter or less
1,2-dichloroethane	0,004 mg/liter or less
1,1-dichloroethane	0,02 mg/liter or less
Cis 1,2-dichloroethylene	0,04 mg/liter or less
1,1,1-trichloroethane	1 mg/liter or less
1,1,2-trichloroethane	0,006 mg/liter or less
Trichloroethylene	0,03 mg/liter or less
Tetrachloroethylene	0,01 mg/liter or less
1,3-dichloropropene	0,002 mg/liter or less
Thiram	0,006 mg/liter or less
Simazine	0,003 mg/liter or less
Thiobencarb	0,02 mg/liter or less
Benzene	0,01 mg/liter or less
Selenium	0,01 mg/liter or less
Boron	1 mg/liter or less
Fluoride	0,8 mg/liter or less
Nitrate-N, nitrite-N	10 mg/liter or less





SHIRANUI SEA

Minamata River

Chisso Factory

Minamata Bay

Hyakken Harbour

# *Minamata*

- Primeiros casos na década de 50
  - Terra dos gatos loucos
  - Vilas de pescadores e 1 fábrica - Chisso
  - Crescimento acelerado pós-guerra
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# ***Mais fatos***

- 1956 – primeiro “caso oficial”
  - Número aproximado de 12.000 pessoas atingidas;
  - Estima-se que de 70 a 150 toneladas de Hg foram lançadas na baía;
  - Projeto Recuperação da baía 1977 – 1990
  - Custo de 40 bilhões de ienes( aproxim. US\$ 360 milhões)
  - 713 vítimas vivas(2006)
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# “NOVAS TECNOLOGIAS”

- IRON-POWDER REMEDIATION METHOD;
- ÁGUA SUBCRÍTICA
- ATERROS OCEÂNICOS
- CARBONIZAÇÃO DE RESÍDUOS (PIRÓLISE)
- USINA TRATAMENTO PCB



# Carbonização de resíduos

## Biomass Carbonization Products

**Biomass**

**Carbonization/liquefying/distillation**

**Solid**

**Charcoal,  
Char**

**Agriculture**

**liquid**

**Wood vinegar,  
Tar, Pitch**

**Agriculture,  
thermal energy**

**gas**

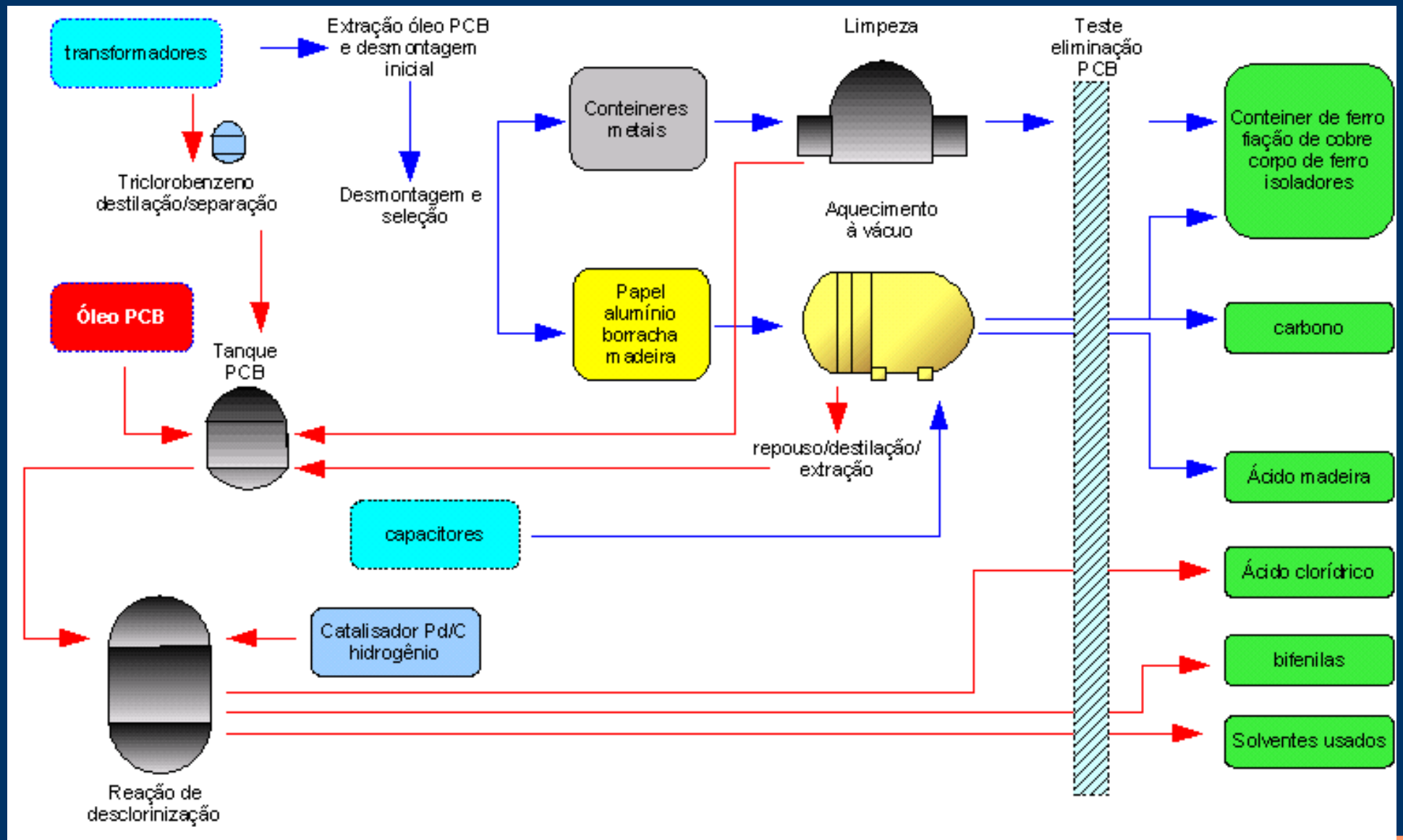
**Hydrocarbon gas**

**Thermal energy**

# Carbonização de resíduos

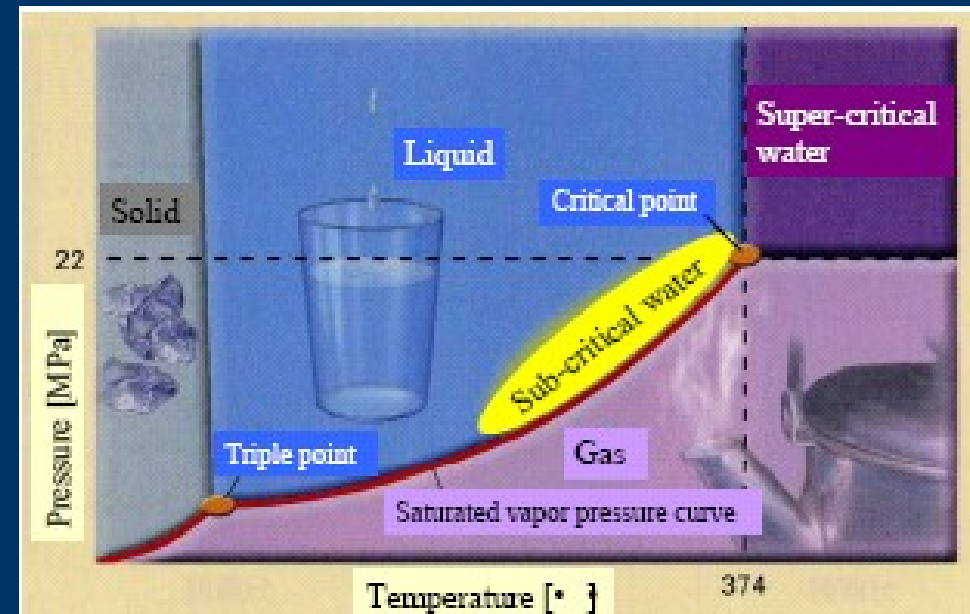


# PLANTA TRATAMENTO PCB





# Água subcrítica



# *PROJETO PHOENIX*

- ATERRO NA BAIA DE OSAKA
- RESÍDUOS DE 6 PROVÍNCIAS DA REGIÃO DE KINKI
- COMEÇO DAS OBRAS EM 1991
- PREVISÃO DE OPERAÇÃO ATÉ 2023









***OBRIGADO !***

