



# CONTAMINATED LAND MANAGEMENT IN MALAYSIA: FOCUS ON DIOXIN CONTROL

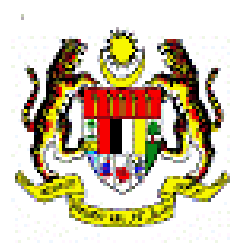


# OUTLINE

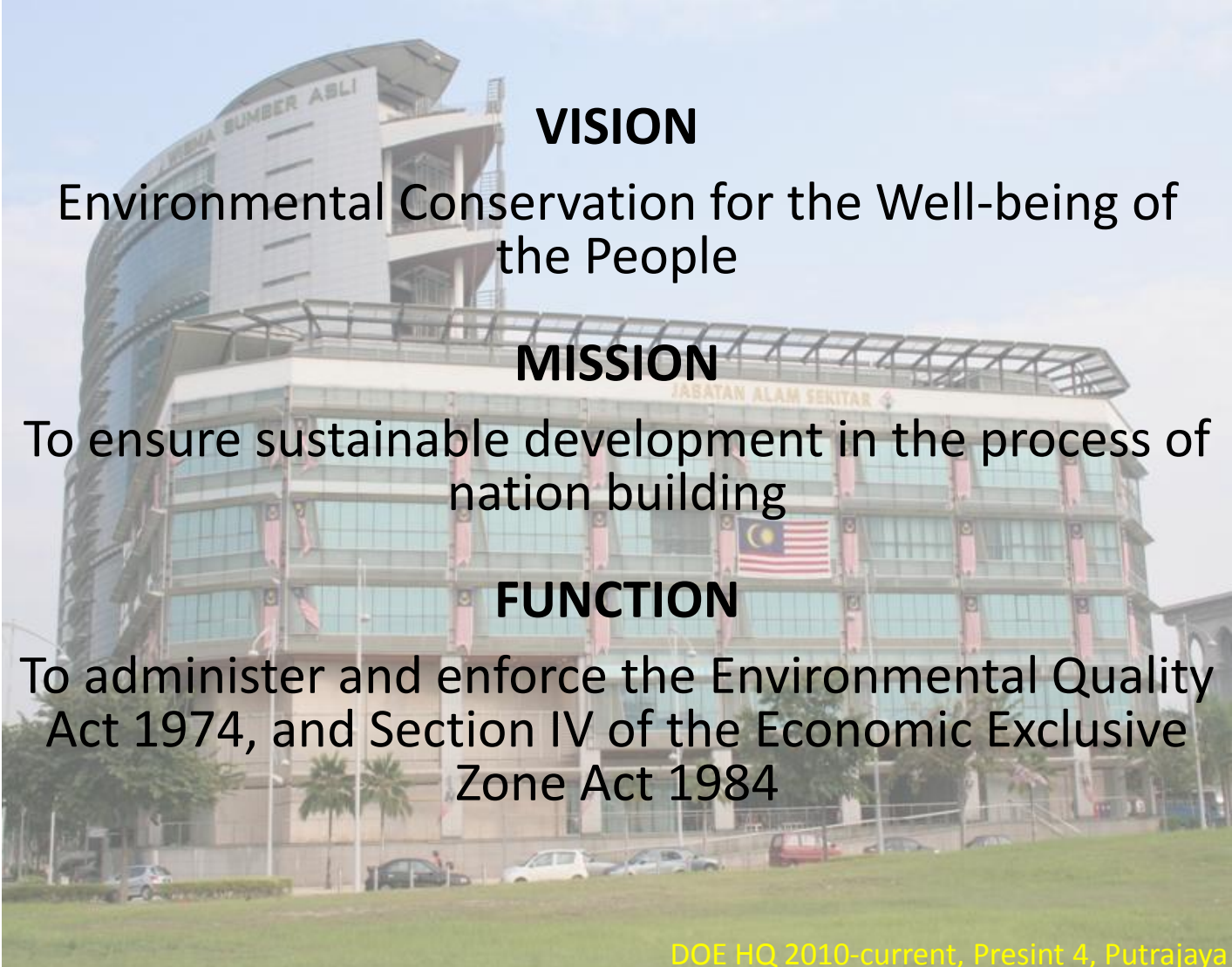
- 
- Introduction

- Legislation on Control Dioxin in Malaysia
  - Environmental Quality Act 1974 (Act 127)
  - Environmental Quality (Dioxin and Furan) Regulations 2004
  - Environmental Quality (Scheduled Wastes) Regulations 2005
  - Environmental Quality (Pollution of the Soil) Regulations 20XX

- Conclusion



# DEPARTMENT OF ENVIRONMENT MALAYSIA



## VISION

Environmental Conservation for the Well-being of the People

## MISSION

To ensure sustainable development in the process of nation building

## FUNCTION

To administer and enforce the Environmental Quality Act 1974, and Section IV of the Economic Exclusive Zone Act 1984

DOE HQ 2010-current, Presint 4, Putrajaya



DOE HQ 1975-1986, MUI Plaza, KL



DOE HQ 1986-2001, Wisma Sime Darby, KL



DOE HQ 2001-2006, Presint 1, Putrajaya



# INTRODUCTION

- Malaysia has not inherited such a frightening legacy of contaminated land as in other developed countries.
- Many sites such as motor workshops, petrol stations, fuel depots, railway yards, landfills, industrial sites and ex-mining land can be potential contaminated sites.
- Little work carried out in identifying contaminated sites
- A study on criteria and standard for managing and restoring contaminated land in Malaysia was commissioned under Ninth Malaysia Plan.
- Contaminated land is slowly gaining importance in Malaysia.

# LEGISLATION ON CONTROL DIOXIN IN MALAYSIA

## DEPARTMENT OF ENVIRONMENT MALAYSIA

- Environmental Quality Act 1974 (Act 127)
- Environmental Quality (Dioxin and Furan) Regulations 2004
- Environmental Quality (Scheduled Wastes) Regulations 2005
- Environmental Quality (Pollution of the Soil) Regulations 20XX



# ENVIRONMENTAL QUALITY ACT 1974 (ACT 127)

- Environmental Quality Act (EQA) being gazette in 14 March 1974 & came into force on 15 April 1975.
- **Objective** - To prevent, abate, control pollution and to enhance the quality of the environment, and for purpose connected therewith.
- **Rationale** - To address possible impact on human health as a result of increasing industrialisation process in the early seventies & To establish a comprehensive legal framework to deal with environmental problems.
- **Application** - EQA is applicable to the whole of Malaysia

UNDANG-UNDANG MALAYSIA

AKTA KUALITI ALAM  
SEKELILING 1974  
(AKTA 127) &  
PERATURAN-PERATURAN DAN PERINTAH-PERINTAH

(HINGGA 15<sup>th</sup> SEPTEMBER 2001)



International Law Book Services

ILBS

LAW  
OF  
MALAYSIA

ENVIRONMENTAL  
QUALITY ACT 1974  
(ACT 127),  
REGULATIONS, RULES & ORDERS

(AS AT 25<sup>th</sup> SEPTEMBER 2010)



International Law Book Services

ILBS  
*Trusted Name In Law*

AKTA KUALITI ALAM SEKELILING 1974 (AKTA 127) & PERATURAN-PERATURAN DAN PERINTAH-PERINTAH

(HINGGA 15<sup>th</sup> SEPTEMBER 2011)



International Law Book Services

ILBS

ENVIRONMENTAL QUALITY ACT 1974 (ACT 127), REGULATIONS, RULES & ORDERS

(AS AT 25<sup>th</sup> SEPTEMBER 2010)



International Law Book Services

ILBS

Trusted Name In Law

# ENVIRONMENTAL QUALITY ACT 1974 (ACT 127)

## ○ Approach

- Remedial through Enforcement of EQA.
- Preventive such as:-
  - land use planning;
  - Environmental input to resource & regional planning; and
  - Environmental Impact Assessment.

## ○ Control Pollution through:-

- Standards
- Written permission
- Licensing

# EQA, 1974 - RELEVANT SECTIONS

- Section 22 - the restriction on pollution of the atmosphere;
- Section 31 – require of a premises to install pollution control equipment, conduct a study on environmental risk, and maintain a monitoring program;
- Section 33A - request for an environmental audit for premises perceived to be polluting;
- Section 34B - No person may deposit or dispose of scheduled wastes except at prescribed premises;
- Prescribed premises require;
  - ✓ Section 34A - An Environmental Impact Assessment (EIA);
  - ✓ Section 18A - license to occupy and use the premises;
  - ✓ Section 19A - written permission for construction.

# Environmental Quality (Dioxin and Furan) Regulations 2004



- Dioxin had been listed as POPs in Annex C of Stockholm Convention;
- Malaysia has prepared a National Implementation Plan for Stockholm Convention but not yet ratified the Convention.

# Environmental Quality (Dioxin and Furan) Regulations 2004

- Made under Section 22, EQA 1974 – restriction on pollution of the atmosphere;
- Came into force on 1<sup>st</sup> May 2004;
- Purposed – control emission, discharge or deposit of dioxin and furan into the atmosphere from selected facilities;
- Application -
  - ❖ municipal solid wastes incinerators;
  - ❖ scheduled wastes incinerator;
  - ❖ pulp or paper industry sludge incinerator; and
  - ❖ sewage sludge incinerator.

# Environmental Quality (Dioxin and Furan) Regulations 2004

- Concentration limit for air emission of dioxin and furan shall not exceed 0.1 ng/Nm<sup>3</sup> TEQ;
- Sampling and analysis methods – in accordance with USEPA methods 23 and methods 8290 or any other methods as approved by Director General of DOE;
- Legal Action –
  - ❖ Written Notices;
  - ❖ Suspension of license;
  - ❖ Prohibition order;
  - ❖ Prosecution – Any person who contravenes this section is liable to a fine not exceeding RM100,000 or imprisonment for a period not exceeding 5 years or both and a fine not exceeding RM1,000 a day for everyday that the offence is continued after a notice by the Director General of DOE.



## Environmental Quality (Scheduled Wastes) Regulations 2005



# WHAT IS SCHEDULED WASTES?

**Scheduled Wastes** means any wastes falling within the category of waste listed in the First Schedule, Environmental Quality (Scheduled Wastes) Regulations 2005

- have been categorised based on type of waste.
- Currently, there are 77 categories of scheduled wastes which are grouped into 5.
- SW 407 – Wastes containing Dioxin.



Clinical wastes (SW404)



Aluminium dross (SW104)



Spent catalysts (SW202)



Asbestos wastes (SW201)



Lead acid batteries (SW102)



Wastewater sludge (SW204)



E-waste (SW110)



# SCHEDULED WASTES MANAGEMENT

- **OBJECTIVE** - To ensure proper management of scheduled wastes to protect the environment
- **PRINCIPLE** - Cradle to Grave
- **Legal responsibility on waste generator to ensure:**
  - Safe and proper disposal of waste
  - Safe and appropriate transport
  - Appropriate classification waste
  - Accurate declaration of waste
  - Proper packaging and labeling of waste
  - Maximum avoidance, reduction and recycling of waste

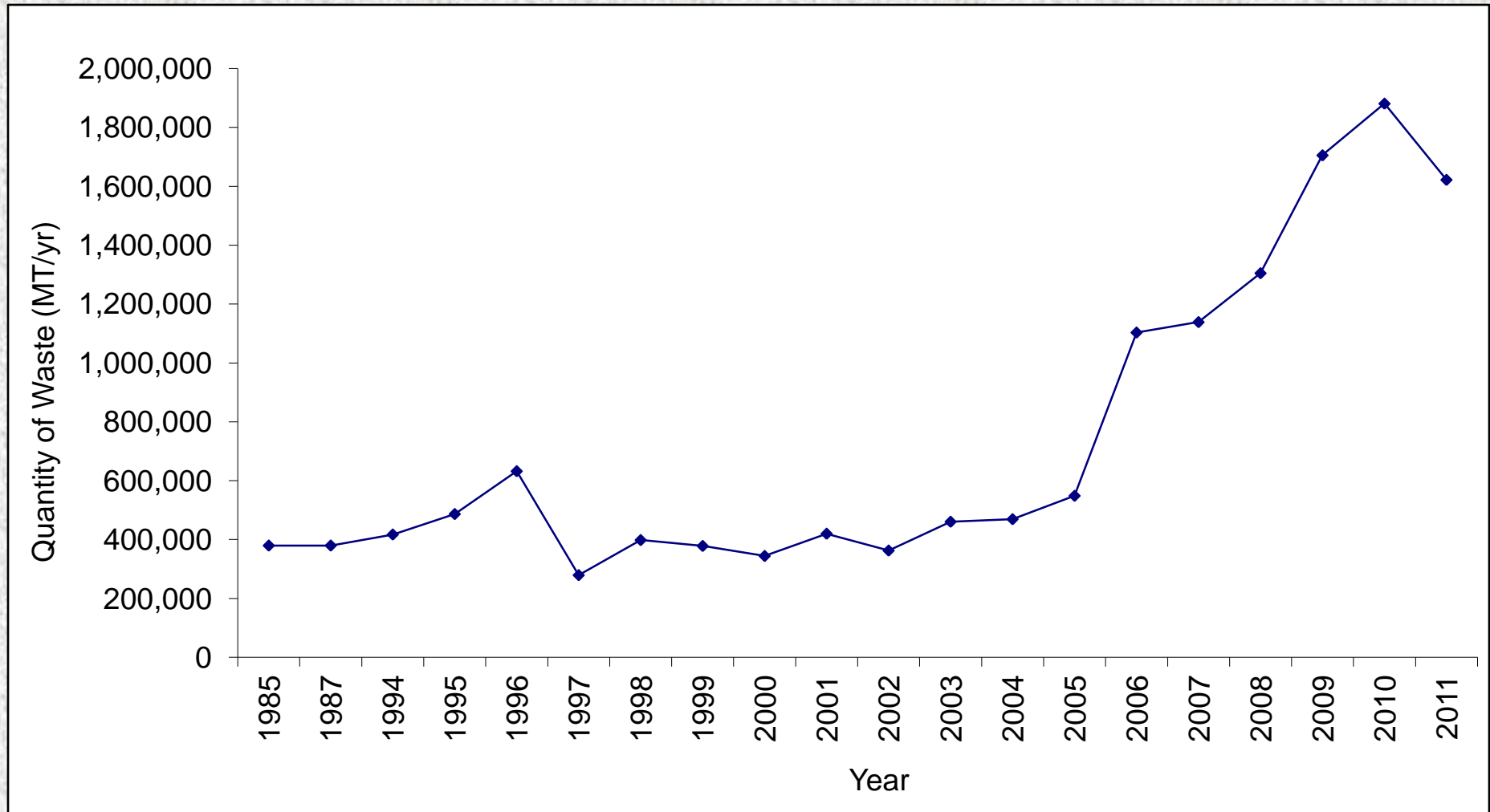


# POLICIES ON SCHEDULED WASTES

- Malaysia does not allow import of SW into the country;
  - ✓ Malaysia does allow import of used electronic and electrical equipment (EEE) for direct reuse, provided the equipment not more than three years from the date of manufacture;
- Malaysia does not allow export of SW out of the country;
  - ✓ Export SW only if local recovery facilities does not have the capability and capacity;
  - ✓ Need to submit the justification according to Basel Convention procedures;
  - ✓ Consideration based on case by-case basis; and
  - ✓ Export of SW for final disposal is not allowed.

# QUANTITY OF SCHEDULED WASTES GENERATED

Malaysia: Quantity of Scheduled Wastes Generated by Year 1985 - 2011

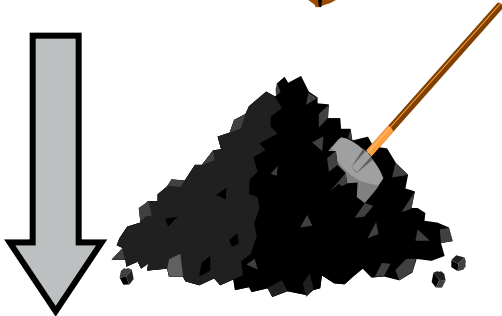


# SCHEDULED WASTE S MANAGEMENT

- Responsibilities of waste generator



Notify DOE the types and quantities of wastes generated



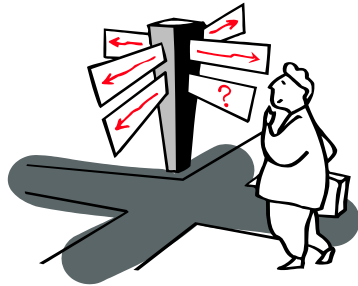
Reduce to the maximum extent practicable waste generation using the best practicable means



Keep an up-to-date inventory of wastes generated, treated and disposed of

# SCHEDULED WASTE MANAGEMENT

- Responsibilities of waste generator



Monitor and ensure the waste transported reaches the approved destination



Wastes can be stored, recovered and treated on-site



Wastes must be kept in proper containers, properly labeled and stored in designated areas

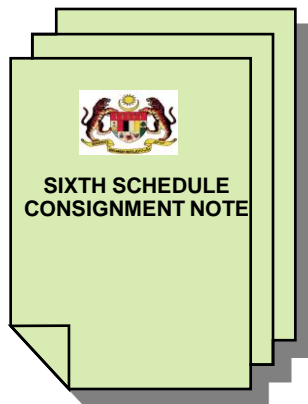


# SCHEDULED WASTE MANAGEMENT

- Responsibilities of waste transporter/contractor

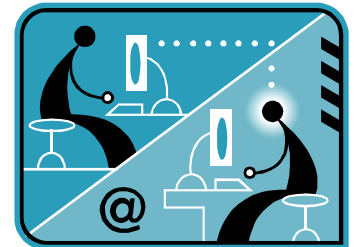


Apply to DOE for a license to transport waste. Licenses issued based on type of waste.



Conform to consignment note system.

- Consignment Note
- e-Consignment (on-line)

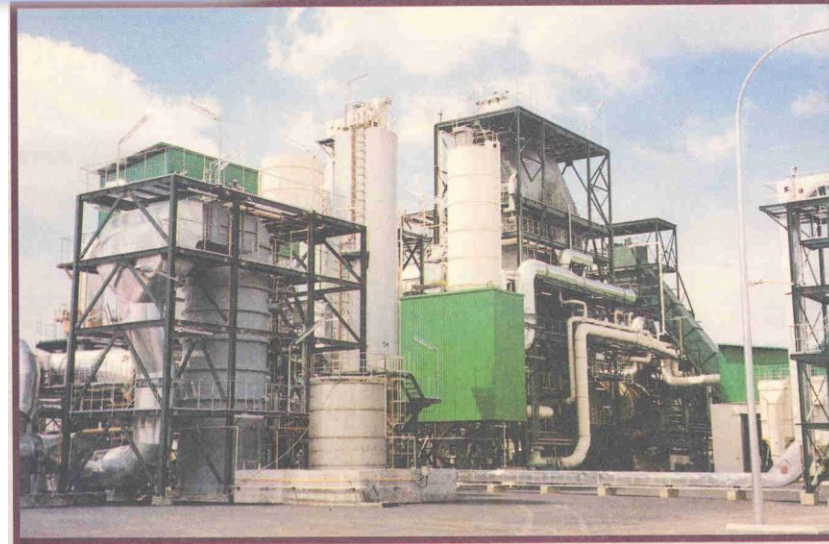


# SCHEDULED WASTE MANAGEMENT

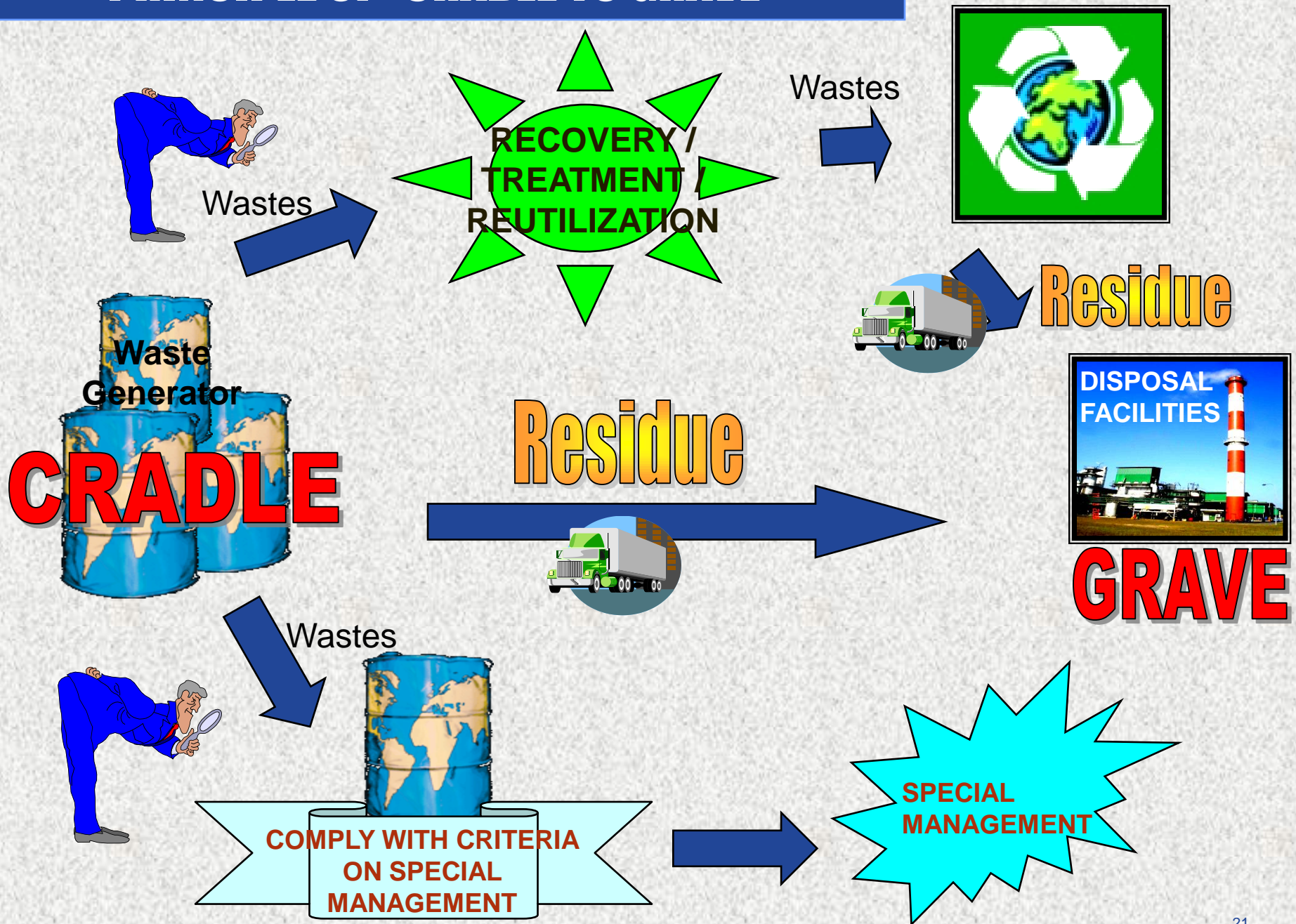
- Responsibilities of treatment/disposal/recovery operator



Off-site treatment, off-site storage, off-site recovery and disposal are allowed only at prescribed premises



# PRINCIPLE OF 'CRADLE TO GRAVE'



# ENVIRONMENTAL QUALITY (POLLUTION OF THE SOIL) REGULATIONS 20XX



# WHY LAND CONTAMINATION IS A CONCERN?

- Groundwater is a precious natural resource.
- Land is considered one of the limited resources
  - contaminated land depletes our land resources for other usages
- Land contamination normally goes unnoticed.
- Severe land contamination will have significant impacts on human health and the environment
- Significant liability issues associated with land contamination – unlike wastewater discharge or air emission, land contamination stays long after chemicals releases.
- Sites contaminated by illegal dumping of toxic and hazardous waste where clean-up were subsequently undertaken.



# IS SOIL POLLUTION CONTROL BY EQA , 1974 ?

**Section 24** of the **Environmental Quality Act 1974** states that;

- (1) No person shall, unless licensed, pollute or cause or permit to be polluted any soil or surface of any land in contravention of the acceptable conditions specified under section 21.
- (2) Notwithstanding the generality of subsection (1), a person shall be deemed to pollute any soil or surface of any land if –
  - (a) he places in or on any soil or in any place where it may gain access to any soil any matter whether liquid, solid, or gaseous; or
  - (b) he establishes on any land a refuse dump, garbage pit, soil and rock disposal site, sludge deposit site, waste injection well or otherwise used land for the disposal of or a repository for solid or liquid wastes so as to be obnoxious or offensive to human beings or interfere with underground water or detrimental to any beneficial use of the soil or the surface of the land.

# EQA, 1974 – Section 24

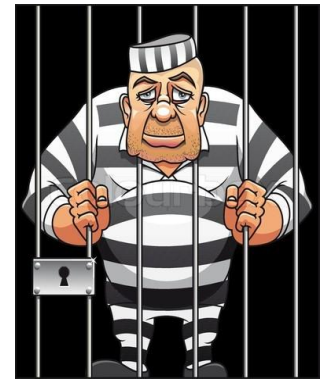
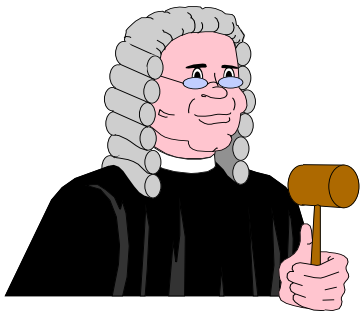
## PENALTY



Compounding of offence shall not exceed RM 2,000



Any person who contravenes this section shall be guilty of an offence and shall be liable to a fine not exceeding **one hundred thousand ringgit** or to imprisonment for a period of not exceeding **five years** or both and to a further fine not exceeding one thousand ringgit a day for every day that is continued after a notice by the Director General to cease the act specified therein has been served



# WHAT IS CONTAMINATED LAND?

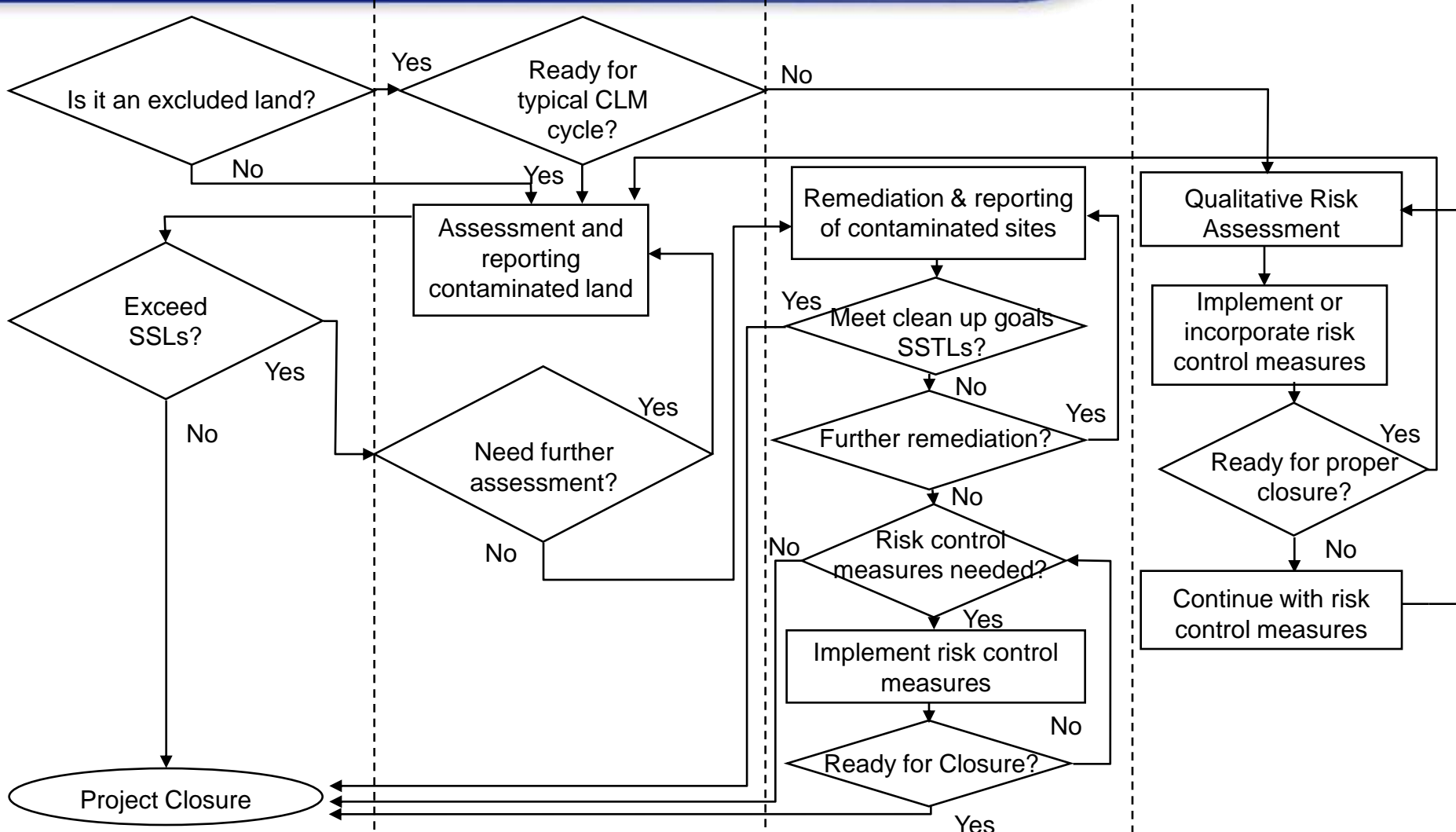


**Contaminated Land** means a site at which a substances occur at concentration:

- Above the concentration at which the substance is normally present in or on the land in the same locality and pose or are likely to pose an immediate or long term hazard to human health or the environment; or
- Exceed concentration specified in the Site Screening Levels (SSLs).



# CONTAMINATED LAND MANAGEMENT FRAMEWORK



Contaminated Land Management and Control Guidelines No. 1: Malaysian Recommended Site Screening Levels for Contaminated Land

Contaminated Land Management and Control Guidelines No. 2: Assessing and Reporting Contaminated Sites

Contaminated Land Management and Control Guidelines No. 3: Remediation of Contaminated Sites



# CONTAMINATED LAND ASSESSMENT CRITERIA



- Prescribed in the 'Contaminated Land Management and Control Guidelines No. 1: Malaysian Recommended Site Screening Levels for Contaminated Land'
- US EPA Regional Screening Levels has been referred to as Site Screening Levels (SSLs)
- Exceeding SSLs indicates potential subsurface contamination
- Be noted that SSLs are not the national cleanup standards, it is use in the process of identifying and defining areas, contaminants, and conditions at a particular site.
- Responsible parties need to justify clean up target levels known as Site Specific Target Levels (SSTLs) that are protective of human health and ecological well being.
- SSTLs can be derived through scientifically defensible risk assessment approach.



Contaminated Land Management  
and Control Guidelines No. 1:  
Malaysian Recommended  
Site Screening Levels for  
Contaminated Land

# SSLs for Six (6) of Dioxin Compounds



Analyte	CAS No.	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Residential Air (ug/m <sup>3</sup> )	Industrial Air (ug/m <sup>3</sup> )	Tapwater (ug/L)
Hexachlorodibenzo-p-dioxin	34465-46-8	4.5E-05	1.8E-03	6.4E-07	3.2E-05	5.2E-06
Hexachlorodibenzo-p-dioxin, Mixture	NA	9.4E-05	3.9E-03	1.9E-06	9.4E-05	1.1E-05
2,3,7,8-Heptachlorodibenz o-dioxin (HpCDD)	37871-00-4	4.5E-04	1.8E-02	6.4E-06	3.2E-04	5.2E-05
Octachlorodibenzo-P-Dioxin (OCDD)	3268-87-9	1.5E-02	6.1E-01	2.1E-04	1.1E-02	1.7E-03
2,3,7,8-Pentachlorodibenz o-P-Dioxin (PeCDD)	36088-22-9	4.5E-06	1.8E-04	6.4E-08	3.2E-06	5.2E-07
2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD)	1746-01-6	4.5E-06	1.8E-04	6.4E-08	3.2E-06	5.2E-07

- ✓ Prescribed in the 'Contaminated Land Management and Control Guidelines No. 2: Assessing and Reporting Contaminated Sites'
- ✓ Site assessment activities, i.e.:-
  - Initial Assessment (or Phase I ESA)
  - Detailed Assessment (or Phase II ESA)
  - Risk Assessment



Contaminated Land Management  
and Control Guidelines No. 2:  
Assessing and Reporting  
Contaminated Sites



Contaminated Land Management  
and Control Guidelines No. 3:  
Remediation of Contaminated Sites

✓ Remediation processes would apply for the following scenarios:-

- Site(s) with soil and groundwater concentration detected above the SSLs
- Site(s) that are concluded to pose unacceptable risk to human health based on the findings of human health risk assessment performed in accordance with the 'Contaminated Land Management and Control Guidelines No. 2: Assessing and Reporting Contaminated Sites'

# CONCLUSION

- The environmental implication of contaminated land is a potential problem and DOE is now taking initiative to deal with it.
- There is a need for Malaysia to develop its own criteria and standards as a means for the protection and enhancement of contaminated land as well as developing technologies to meet local needs.
- There is a need to raise general awareness amongst the public and overall capacity amongst professionals.
- DOE looks forward to playing an important role, in partnerships with others, in supporting, encouraging and promoting the importance of identifying contaminated land, managing and bringing back these sites into beneficial uses that would eventually contribute to the overall betterment of our environment.



# DEPARTMENT OF ENVIRONMENT

Ministry of Natural Resources and Environment

Level 1 - 4, Podium 2 & 3,

Wisma Sumber Asli,

No 25, Persiaran Perdana, Precint 4,

Federal Government Administrative Centre

62574 Putrajaya, MALAYSIA

[www.doe.gov.my](http://www.doe.gov.my)





# THANK YOU / TERIMA KASIH

Ijan Khushaida Binti Mohd Jan  
e-mail: [ijan@doe.gov.my](mailto:ijan@doe.gov.my)  
Tel: 603-8871 2116