INTEGRATED IMPACT MONITORING FOR INDUSTRIA AREA: KERTEH, MALAYSIA

IAIA CONFERENCE 2004

VANCOUVER, CANADA

26th - 29th APRIL 2004

ENVIRONMENTAL MANAGEMENT GROUP

PETRONAS RESEARCH, MALAYSIA

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LOCATION MAP OF KERTIH INDUSTRIAL AREA

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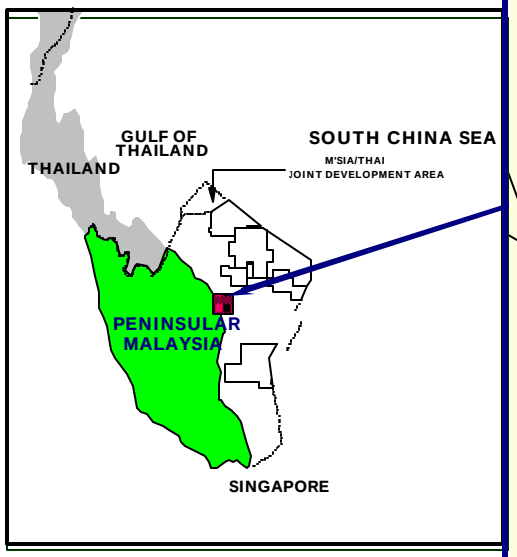
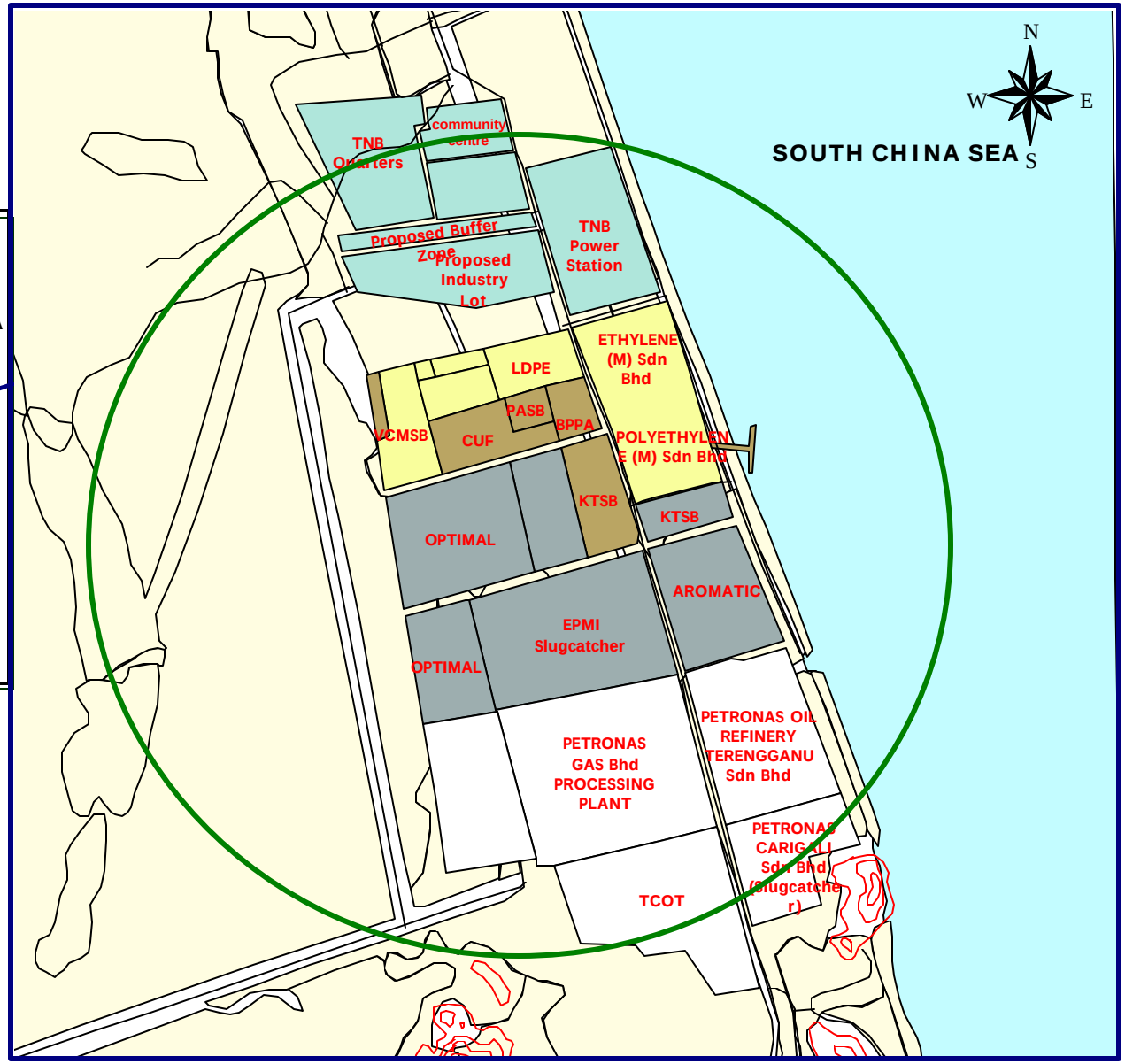


Participating Plants : LDPE, PVC, VCM, AMSB, OPTIMAL, PASB, CUF, KTSB, BPPA, GPPA.



OBJECTIVE OF PRESENTATION

To share experience in initiating and conducting Integrated impact monitoring for an industrial area.

REQUIREMENT ON ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND POST EIA MONITORING

- The Environment Impact Assessment is required under the EQA 1974 for Prescribed Activities onshore, in the Territorial Waters and beyond that [within the EEZ], it is required administratively by the Ministry of Trade and Consumer Affairs.
- Environmental Auditing, Environmental Quality Monitoring and Reporting have been incorporated into the national legislation.
- Other Environmental regulations are Clean Air Act, Sewage & Industrial Effluent, Scheduled Waste and Noise.

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COMPLIANCE TO EIA APPROVAL CONDITION

Plant operator is required to conduct post EIA monitoring as part of its Environmental Management Plan and as a measure of its compliance to regulatory requirements

The parameters ;

- Effluent / wastewater discharge quality;
- Receiving water of the wastewater/effluent water discharged;
- Stack gases emission;
- Ambient air quality; and
- Noise level.

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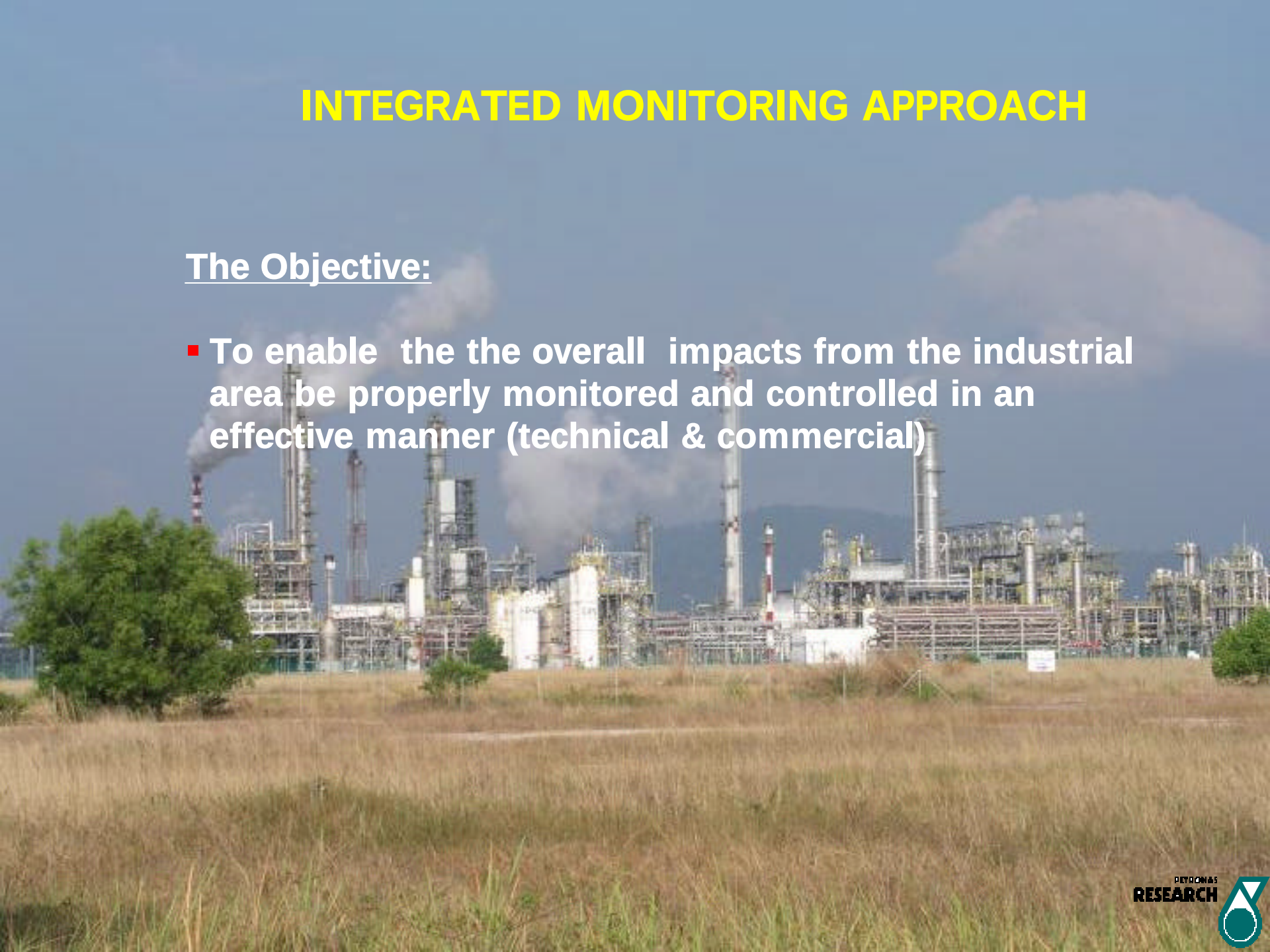
TRADIOTIONAL IMPACT MONITORING PRACTICE

- Project basis;
- Impact monitoring and reporting are conducted individually by each operator for the relevant environmental parameters related to potential impacts from the plant operation;
- No sharing of information among neighborhood;
- Monitoring is conducted as regulatory compliance obligation;
- No assessment on cumulative impacts being conducted.

INTEGRATED MONITORING APPROACH

The Objective:

- **To enable the the overall impacts from the industrial area be properly monitored and controlled in an effective manner (technical & commercial)**



INITIATION & APPROVAL PROCESS

1. REVIEW EIA REPORT & APPROVAL CONDITIONS

2. IDENTIFY / LIST SOURCE / HAZARD FROM EACH PLANT

3. INTEGRATION/CUMULATIVE OF THE INDUSTRIAL COMPLEX
- Technical - Commercial Feasibility

4. DETERMINE/IDENTIFY:
- Issue(s)
- Solution
- Implementation approach

5. SUBMISSION TO DOE FOR APPROVAL

6. PRESENT/TO OPERATORS GET CONCENSUS AGREEMENT
- Technical (HSE)
- Commercial
- Concerns & Issues

7. DETAILS PROGRAM

8. IMPLEMENT

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IMPLEMENTATION:

1. SETTING MONITORING OBJECTIVE/TARGET

- Compliance to Regulatory Requirements:
  - Effluent Discharge, River & Coastal Waters Quality, Air Quality/ Emission
- Minimize Impact and Preservation of the Existing Environment Affected Environmental Components:
  - All Environmental hazards should be identified and measured.
  - The existing environment should be assessed.

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2. WHAT IS EXPECTED FROM FROM THE INTEGRATED MONITORING PROGRAM

- Able to provide early detection on the presence of hazards;
- Parameters monitored sufficient for integrated assessment of impact;
- Data can be used to recommend environmental improvement (operation, maintenance, environmental management program); and
- To be used as reference for future environmental assessment follow-up.

3. CONCERNS

- **Air Emission**
  - Multiple sources & parameters
  - How it is dispersed & deposited/downwashed
  - How to identify the emission source (target limit exceeded)
  - Location of sampling points
- **Wastewater/Effluent Discharges**
  - Parameters , sampling point
  - How to determine the emitter
- **Hydrocarbon / Chemical Spillage**
  - How it migrate
  - How to monitor/detect
  - How to determine source

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IMPLEMENTATION:

4. ASSESSMENT CONDUCTED

- Identification of hazards (type, size, location) of each plant;
- Determination of parameters & type of data required for future reference/use/follow-up;
- Site characteristic study: geological , geographical and pollution pathways were studied ;
- Installation of groundwater wells at a predetermined location. Groundwater flow direction and flow rate were studied & modeled;
- Air modeling: to study emission dispersion, deposition & to determine location of sampling stations;
- Identify VECs, and potential impact to biological communities;
- Determine coverage area;
- To develop Geographical Information System (GIS);
- To set Reference /Standard

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IMPLEMENTATION:

Environmental Components/Parameters Monitored

- Ambient air monitoring
- stack gases
- Noise
- Soil
- Groundwater
- Effluent discharge
- River water and sediment
- Coastal water and sediment
- Biological: community structure, diversity index
- Food tainting

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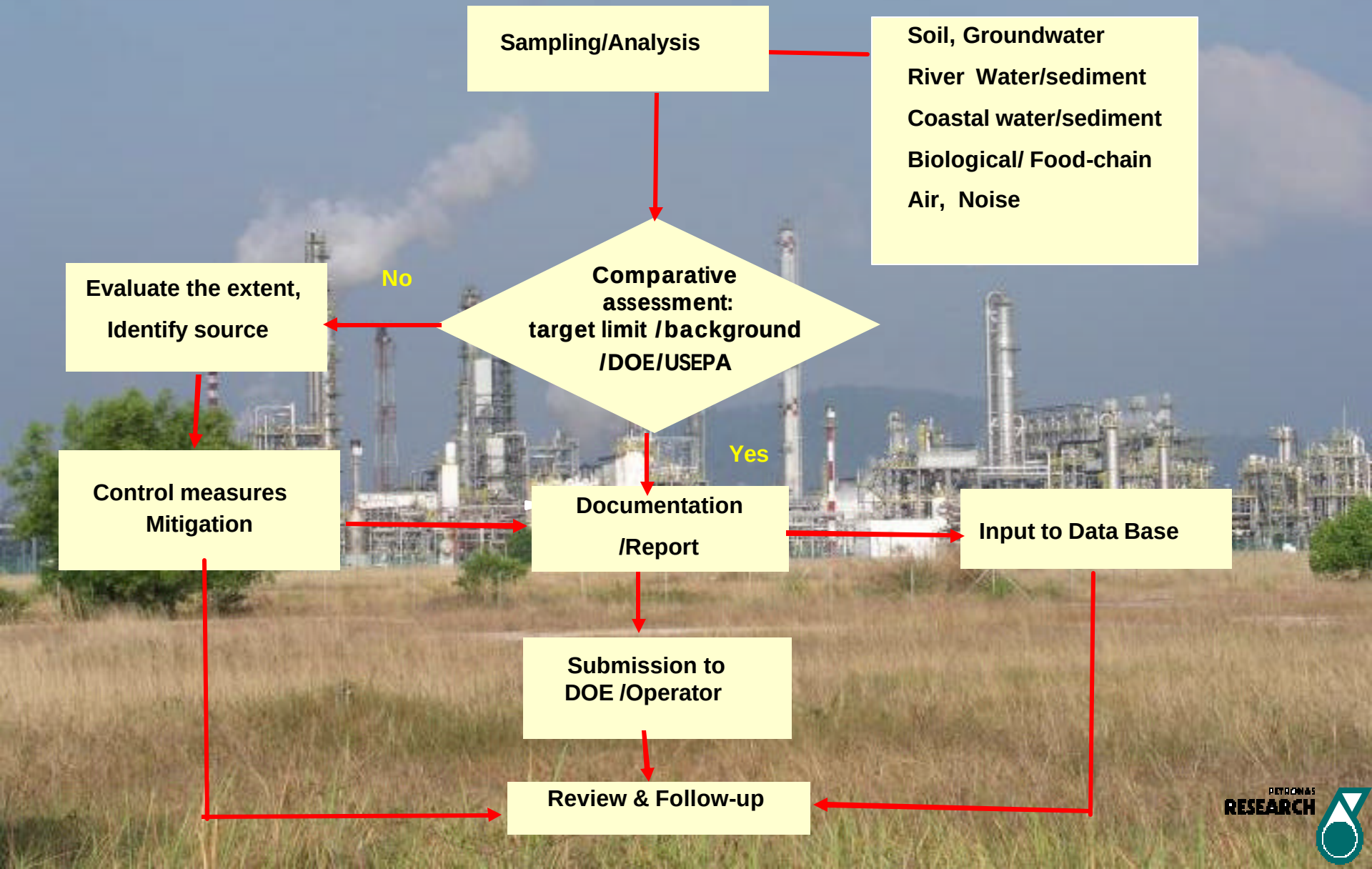
IEM ACTION PROCESS



BENEFIT OF THE INTEGRATED APPROACH

- Early detection on the presence of hazard (subsurface, air) enable immediate mitigation measures taken thus minimized impact/risk to environment.
- The monitoring database developed enable to provide fast response to public complain. The integrated data/ report enabled to assist DOE in evaluating the status of environmental quality of Kertih area (to become a reference for future review and follow-up and land use planning;
- Increase cooperation, understanding and open communication among operators (quarterly discussion). Environmental management program for the area is continuously improved;
- Cumulative impacts from the industrial area can be assessed in an integrated manner ; and
- Cost saving in monitoring (40%).

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CURRENT STATUS

- On the third year monitoring;
- Obtained support from DOE for implementation in other industrial area; and
- Initiate development of Environmental Management System EMIS/WMIS for the area.

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CHALLENGE

- Obtaining consensus agreement from operators;
- Cost is always operator's concern; and

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THANK YOU