

PCB Inventory Assessment proceeding An introduction



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What is PCB Inventory?

- Systematic activity of the PCB identification process.

What is the scope of PCB inventory?

- All probable sources of PCB.

| | Equipment and oil in use or out of use | Infrastructure | Waste |
|---------------------|---|----------------|-------|
| Open Applications | | X | X |
| Closed Applications | X | | X |

PCB Inventory Activities



1. Develop a database of probable stocks and wastes to contain or be contaminated with PCB



2. Develop an Inventory Strategy (Planning)



3. PCB Preliminary Screening (Visual & Documentary Inspection)



4. Sampling



5. Colorimetric or potentiometric Screening



6. Confirmatory laboratory analysis

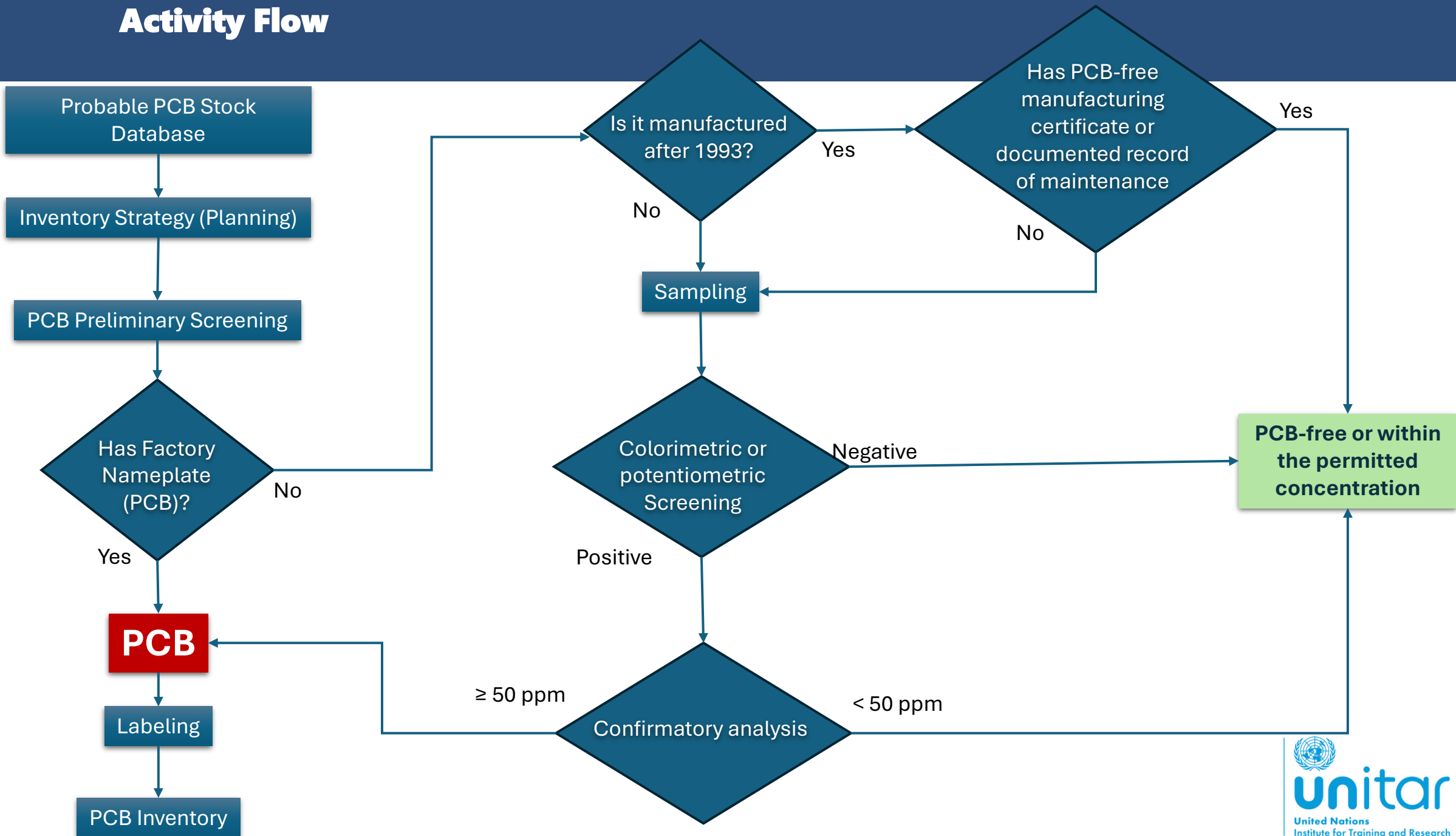


7. Labeling



8. Develop (update) the PCB Inventory

Activity Flow



PCB Inventory Activities



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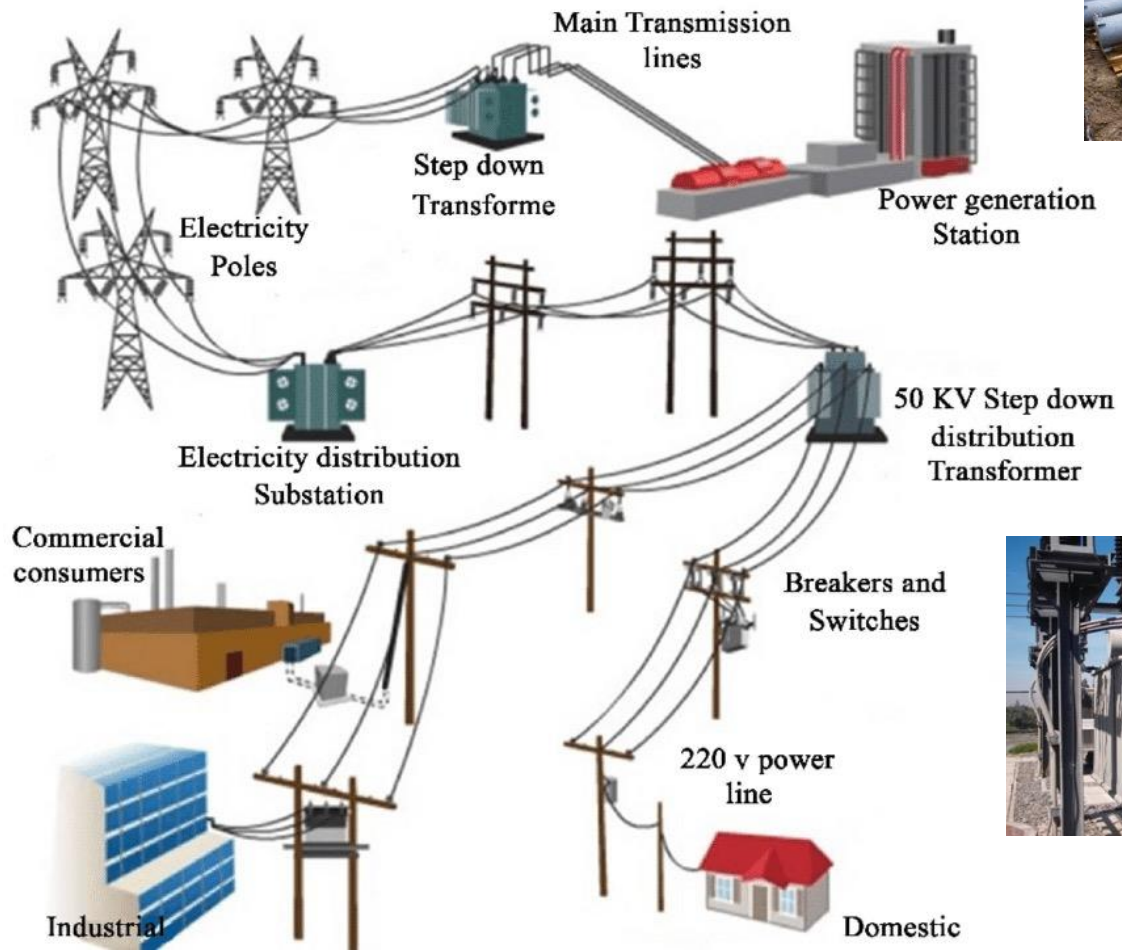


7. Labeling



8. Develop (update) the PCB Inventory

1. Probable PCB Stock Database (Electrical/Industrial companies)



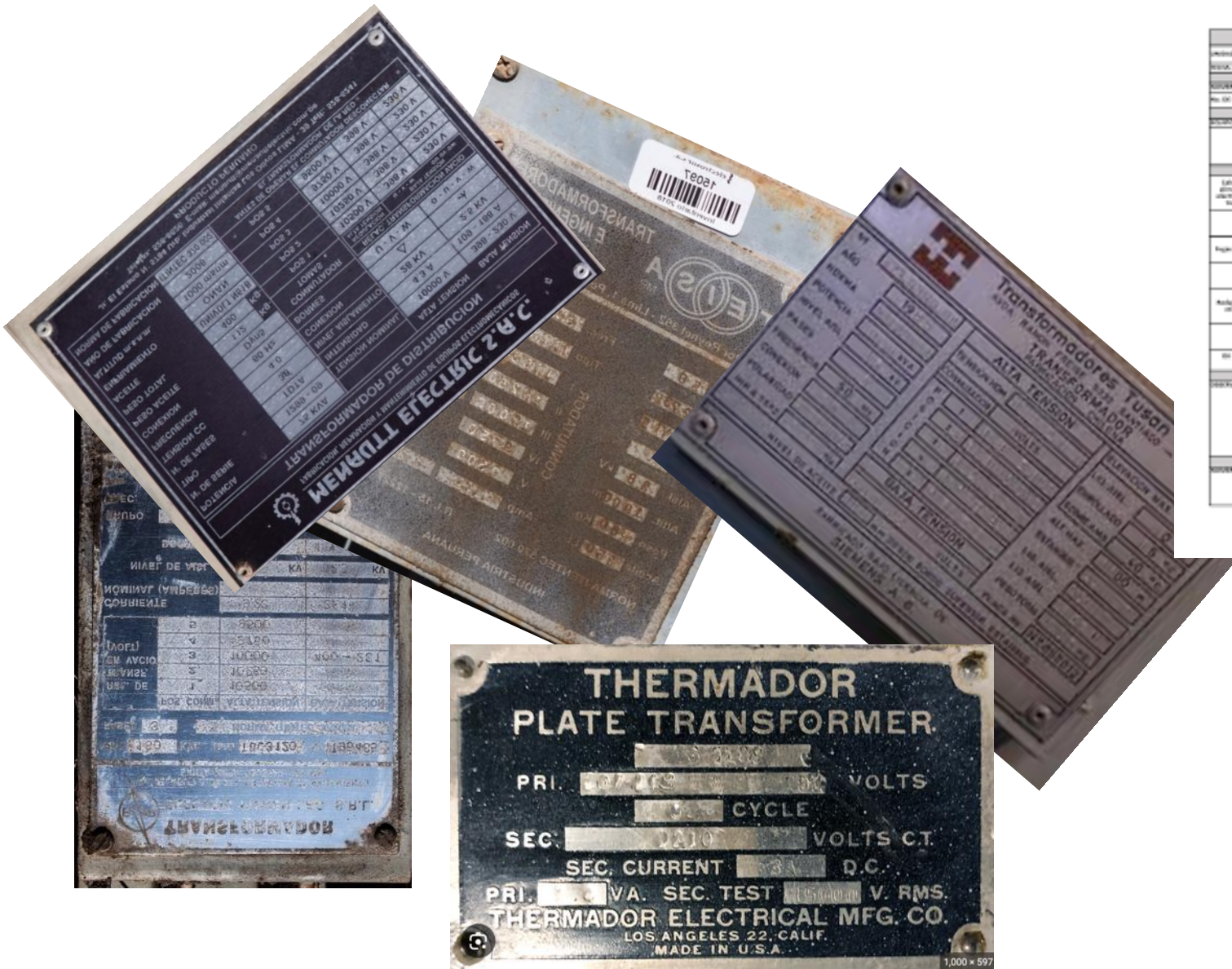
2. Develop an Inventory Strategy (Planning)



Involve middle/high level decision makers and technicians

| Fase | Fecha Inicio | Fecha Término | 2017 | | | | | | | | | | | | | |
|--------------------------|----------------|----------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| | | | Nov | Dic | Ene | Feb | Mar | Abr | May | Jun | Jul | Ago | Sep | Oct | Nov | |
| INICIO DEL PROYECTO | | mié, 14-nov-16 | ◆ | | | | | | | | | | | | | |
| Toma de Datos | mié, 14-nov-16 | mié, 14-dic-16 | ■ | ■ | | | | | | | | | | | | |
| HTO Final diagnóstico | | mié, 14-dic-16 | | ◆ | | | | | | | | | | | | |
| Diseño | mié, 14-dic-16 | mié, 14-mar-17 | | ■ | ■ | ■ | ■ | | | | | | | | | |
| HTO Final diseño | | mié, 14-mar-17 | | | | | ◆ | | | | | | | | | |
| Contratación | mié, 14-mar-17 | mié, 17-abr-17 | | | | | ■ | ■ | | | | | | | | |
| HTO Final contratación | | mié, 17-abr-17 | | | | | | ◆ | | | | | | | | |
| Implementación de KPIs | mié, 17-abr-17 | mié, 30-ago-17 | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| HTO Final implementación | | mié, 30-ago-17 | | | | | | | | | | | | | ◆ | |
| Cierre del Proyecto | mié, 30-ago-17 | mié, 07-nov-17 | | | | | | | | | | | | | ■ | ■ |
| HTO REUNIÓN DE CIERRE | | mié, 07-nov-17 | | | | | | | | | | | | | | ◆ |

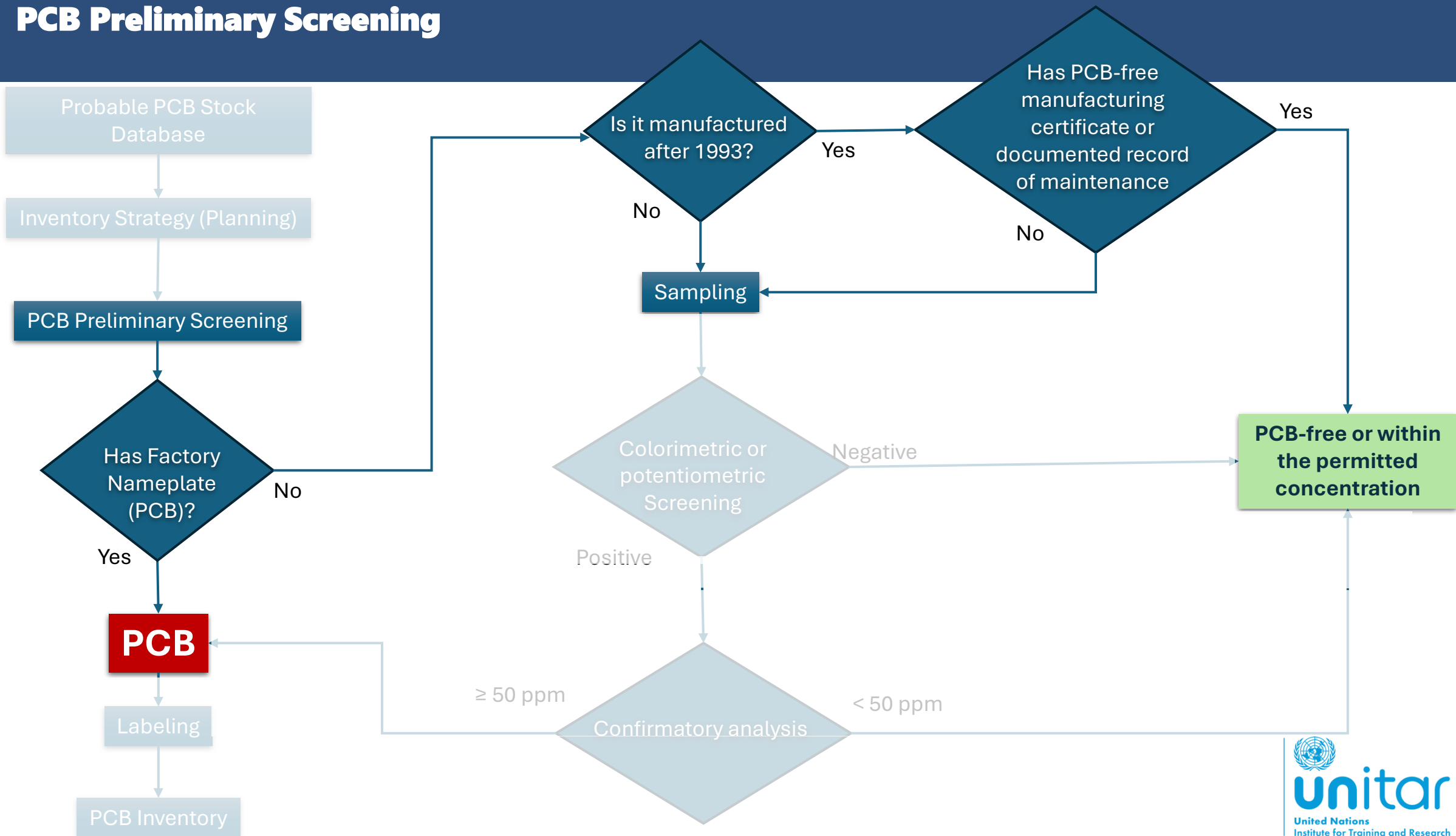
3. PCB Preliminary Screening (Visual & Documentary Inspection)



| BITÁCORA DE MANTENIMIENTO | | | | | |
|--|--------------------------|---------------------------------------|--|--|--------------------------------------|
| UNIDAD DE SERVICIO Y EQUIPO | | | | | |
| NOMBRE: | | SERIAL: | | NÚM. DE SERVICIO: | |
| ESPECIFICACIONES Y DESCRICIÓN | | | | | |
| CATEGORÍA: | | N.º DE EQUIPO: | | FECHA: | |
| NÚM. DE IDENTIFICACIÓN: | | DESCRIPCIÓN DEL EQUIPO: | | | |
| NOMBRE: | | DESCRIPCIÓN DE LA UNIDAD DE SERVICIO: | | | |
| MANTENIMIENTO PREVENTIVO | | | | | |
| Labores de mantenimiento y/o trabajos realizados | Condiciones de trabajo | Material utilizado | Observaciones sobre el funcionamiento del equipo | Trabajo de taller | Fecha: |
| Estado de aceite | Temperatura ambiente | Temperatura de aceite | Medidas de aislamiento | Condiciones de funcionamiento | Observaciones, averías, reparaciones |
| Medidas de aislamiento | Labores de mantenimiento | Estado del equipo | Observaciones | Trabajo de taller | Observaciones, averías, reparaciones |
| EN EL MOMENTO DE ESTE ÍTEM (COMPLETO) | | EN EL MOMENTO DE ESTE ÍTEM (DEFECTOS) | | EN EL MOMENTO DE ESTE ÍTEM (OBSERVACIONES) | |
| OBSERVACIONES: | | | | | |
| EQUIPO: | | SERVICIO: | | ALICADO: | |
| NOMBRE Y FIRMA: | | NOMBRE Y FIRMA: | | NOMBRE Y FIRMA: | |



PCB Preliminary Screening



4. Sampling



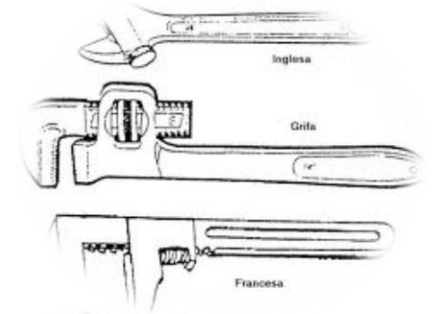
- Etiquetas

PCB Project

| | | |
|-------|-------|--|
| de: | | |
| ber: | | |
| name: | Hour: | |



Planning, personal protection equipment, materials, and tools



Sampling

Good coding
and labeling

Safe transport

Chain of
custody

Can be stored for a
long time

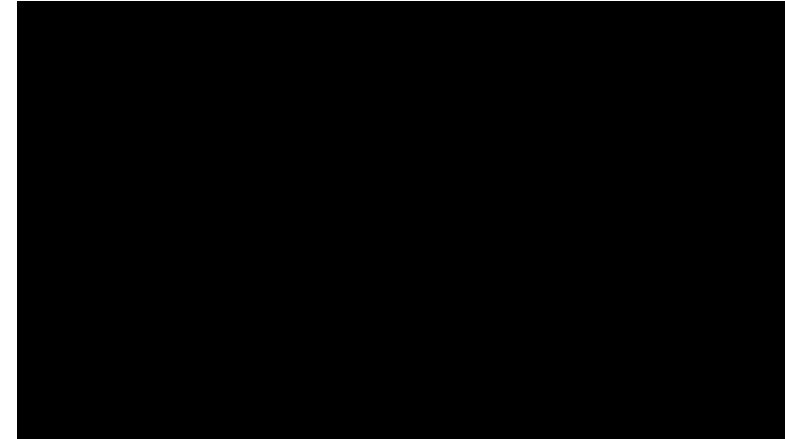
Physical protection

Sealing

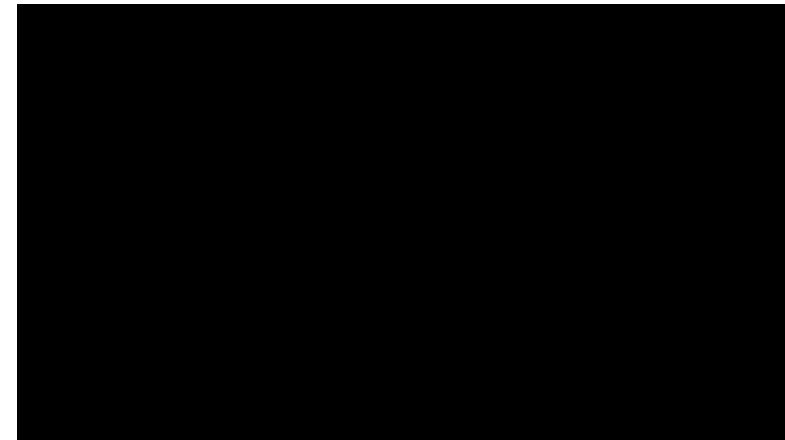
No
refrigeration
required

5. Colorimetric or potentiometric Screening

Colorimetric kit



Potentiometric Analyzer



6. Confirmatory analysis

Gas chromatography (GC)



- More accurate
- More Reliable

- Costly
- Non-portable
- Increased analysis time
- Requires special installations and specialized technicians
- Be an accredited laboratory.



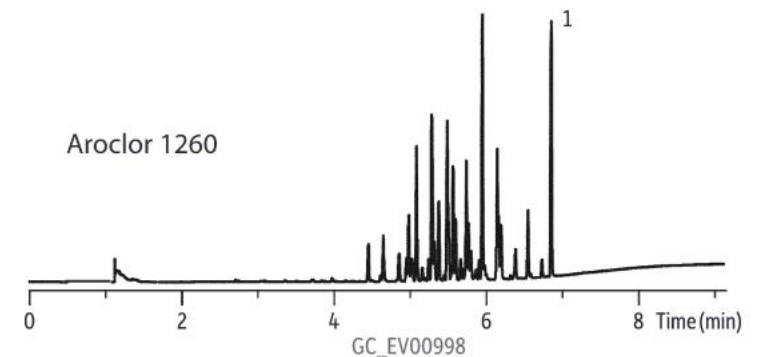
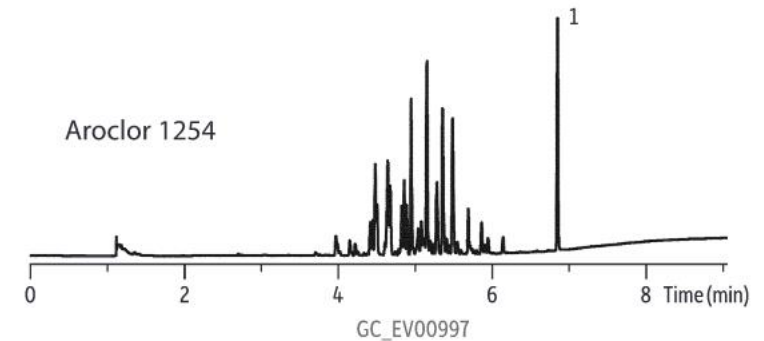
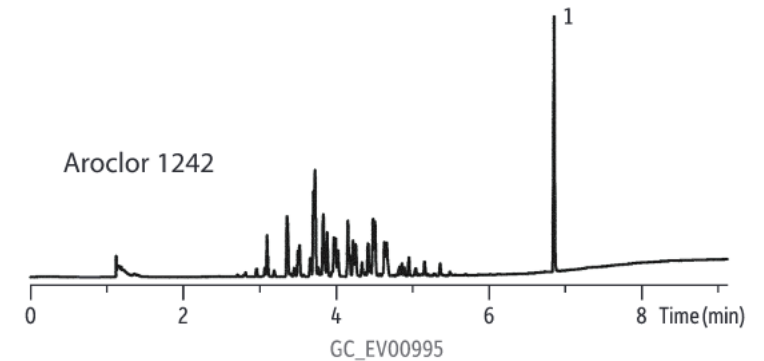
CG Methods:
Electron Capture Detection (ECD)
Electrolytic conduction detection (ELCD)
Mass spectrometer (MS)

2. PCB Analysis (Gas Chromatography)

It must be performed by an accredited laboratory.

The recommended standard method is ASTM D4059–00. At least the concentration of each of the following Aroclors and the sum of them must be detected: 1242, 1254 and 1260

IEC 61619:1997 can also be applied. To detect the 6 indicators and the sum of them is multiplied by 5: PCB 28, PCB 52, PCB 101, PCB 138, PCB 153 and PCB 180.



7. Labeling

Labels that are permanent and resistant to weather changes



| | |
|--|--|
| EGESUR S. A. | |
| EQUIPO LIBRE DE PCB (BIFENILO POLICLORADO) | |
| En caso de accidente, derrame u otra contingencia con este equipo comunicarse a la empresa propietaria del equipo o al cuerpo general de bomberos. | |
| Fecha de análisis: | |
| Año: 15 - 16 - 17 - 18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26 - 27 - 28 | |
| Mes: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 | |
| Día: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14 - 15 - 16 - 17 - 18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26 - 27 - 28 - 29 - 30 - 31 | |
| Hora: _____ | |
| Empresa evaluadora: _____ | |
| Responsable : _____ | |
| Ubicación : ESTE: _____ NOR: _____ | |
| Subestación : SA - SS - SC - AL | |

| | |
|--|--|
| EGESUR S. A. | |
| EQUIPO CON PRESENCIA PERMITIDA DE PCB) | |
| En caso de accidente, derrame u otra contingencia con este equipo comunicarse a la empresa propietaria del equipo o al cuerpo general de bomberos. | |
| Concentración de PCB < a 50 ppm | |
| Fecha de análisis: | |
| Año: 15 - 16 - 17 - 18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26 - 27 - 28 | |
| Mes: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 | |
| Día: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14 - 15 - 16 - 17 - 18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26 - 27 - 28 - 29 - 30 - 31 | |
| Hora: _____ | |
| Empresa evaluadora: _____ | |
| Responsable : _____ | |
| Ubicación : ESTE: _____ NORTE: _____ ZONA: _____ | |
| Subestación : SA - SS - SC - AL - TA Obs: _____ | |

8. Develop (update) the PCB Inventory

Stakeholder information and equipment type

Geographic location

Technical data

PCB screening and identification

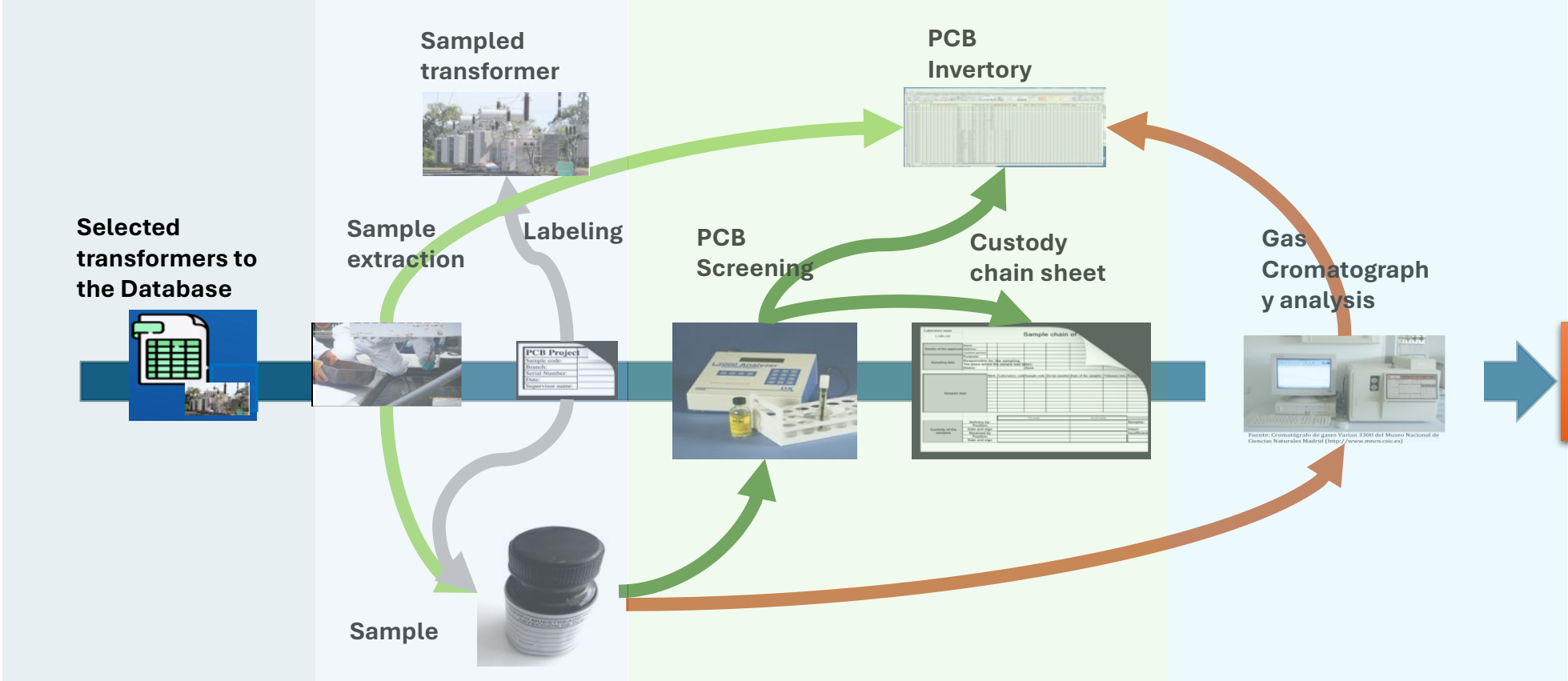
PCB elimination and final disposition

| Name of the company | Sample Number | Activity of the Company (G, T, D) | Type of the Article | Type of the substation (PO, PA, OG, UG, SBM, ST) | Substation Code | Address where the equipment is located | City | District | Zone | Region | Model | Current equipment status (maintenance, in-service, waste or stand by) | Serial Number | Manufacturer | Manufacturing date | Country of Origin | Power (kVA or kVAR) | PerDielectric oil weight (kg) | Total weight (kg) | Does the equipment have PCB screening? (Yes or Not) | Result when the equipment has PCB screening (ppm) | Does the equipment have GC? | Laboratory who analyzed the sample | AROCOR 1242 mg/kg | AROCOR 1254 mg/kg | AROCOR 1260 mg/kg | Sum of the Aroclors mg/kg | The PCB was eliminated? (yes or Not) | Method using for the elimination | Elimination date | Final Disposition of the equipment after the PCB elimination procedure | Observaciones | | | |
|---------------------|---------------|-----------------------------------|---------------------|--|-----------------|--|------|----------|------|--------|-------|---|---------------|--------------|--------------------|-------------------|---------------------|-------------------------------|-------------------|---|---|-----------------------------|------------------------------------|-------------------|-------------------|-------------------|---------------------------|--------------------------------------|----------------------------------|------------------|--|---------------|--|--|--|
| | | D | Transformer | SS | AL | | | | | | | | | | | | | | | Not | Not | Not | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Temporary storage waiting for PCB elimination or final disposition



A screenshot of an Excel spreadsheet titled "100 All Transformers Data". The spreadsheet contains a large table with many columns and rows, likely representing data for 100 transformers. The columns include various attributes such as transformer ID, location, and status. The data is organized in a structured format, with headers and multiple rows of entries.



Scope of the inventory

Sampling and labelling

Screening

Laboratory analysis

PCB Inventory

Thank you!



unitar

United Nations
Institute for Training and Research