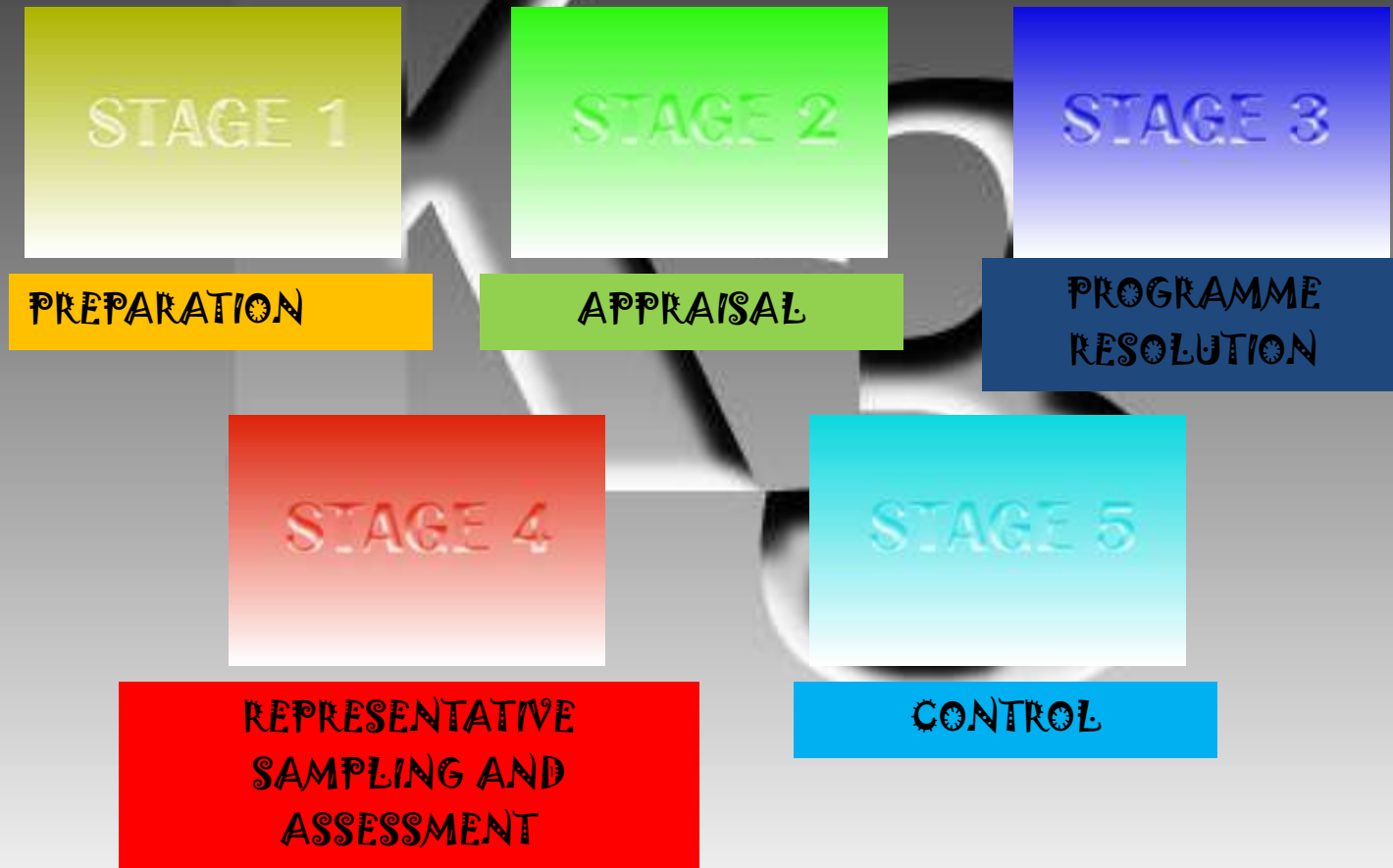


SYSTEMATIC APPROACH AND STRATEGY OF OCCUPATIONAL HYGIENE



START

Preliminary Evaluation of Hazard

Question

What is material?
What is process?
What are intermediate products?
What are final products?
What are wastes?

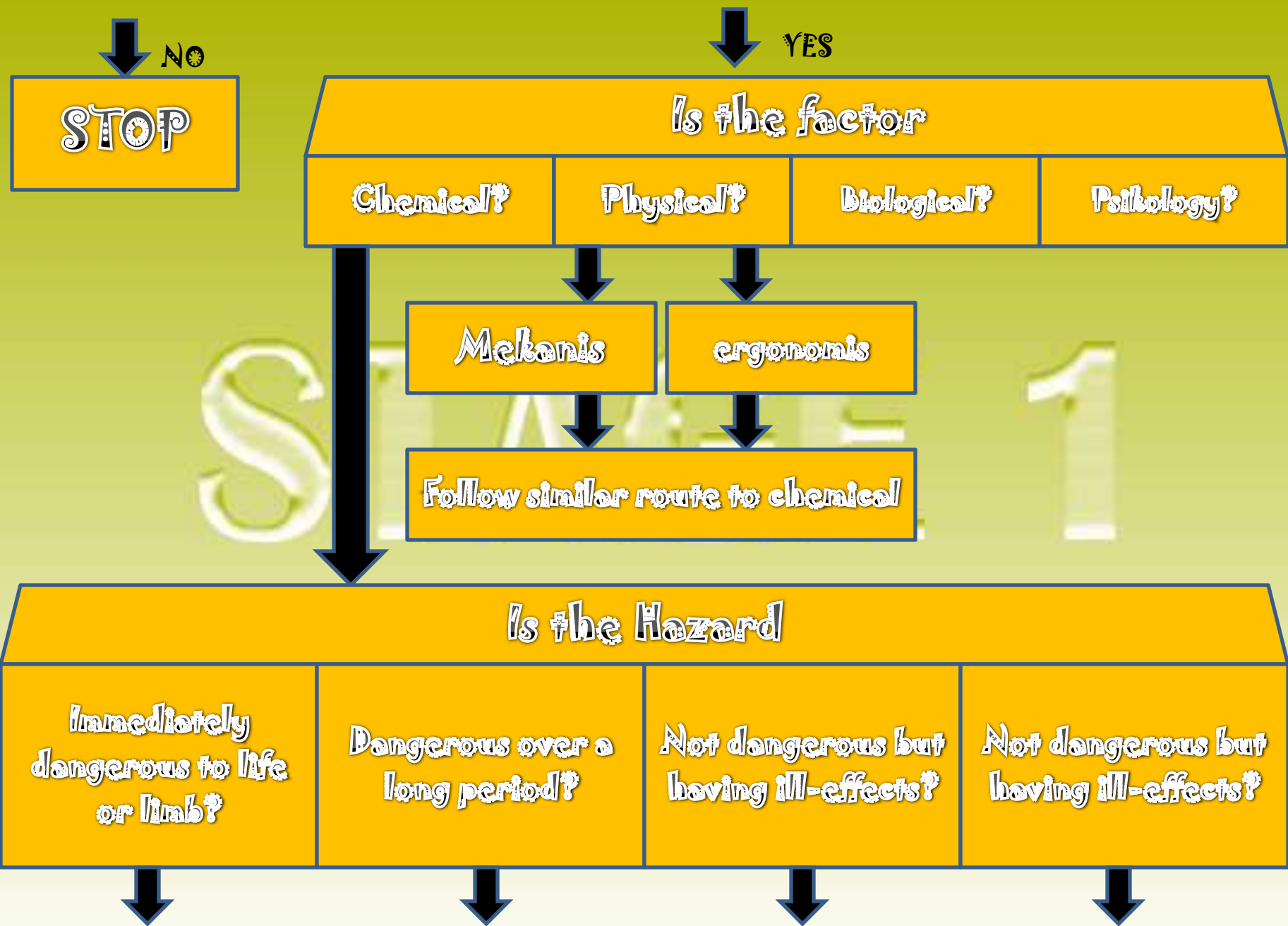
Action

Trace related published
Trace direct or related
Industrial experience

Does this suggest problem?

NO

YES



↓ No

STOP

↓ YES

Is the factor

Chemical?

Physical?

Biological?

Psychology?

Mechanics

Ergonomics

Follow similar route to chemical

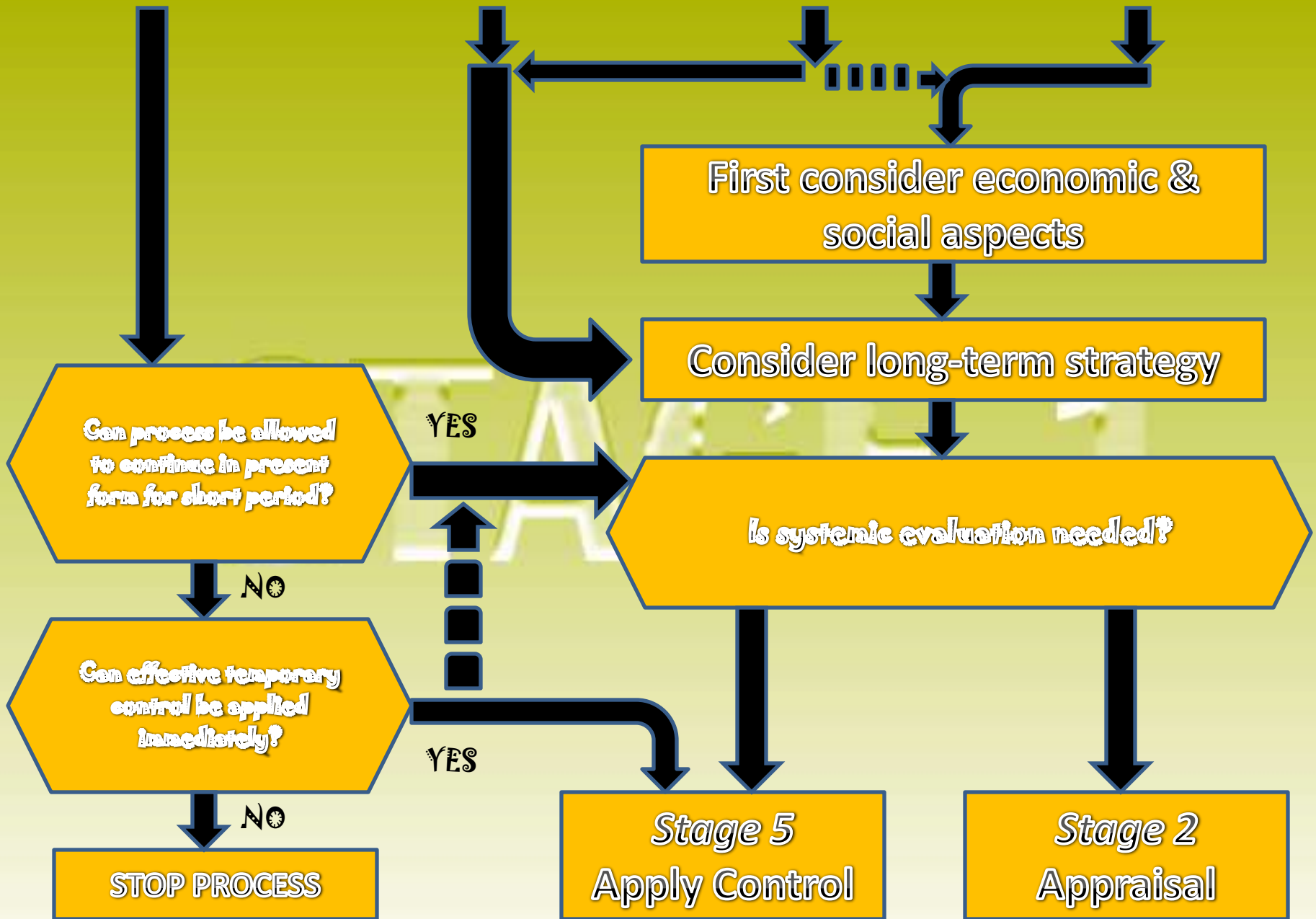
Is the Hazard

Immediately dangerous to life or limb?

Dangerous over a long period?

Not dangerous but having ill-effects?

Not dangerous but having ill-effects?

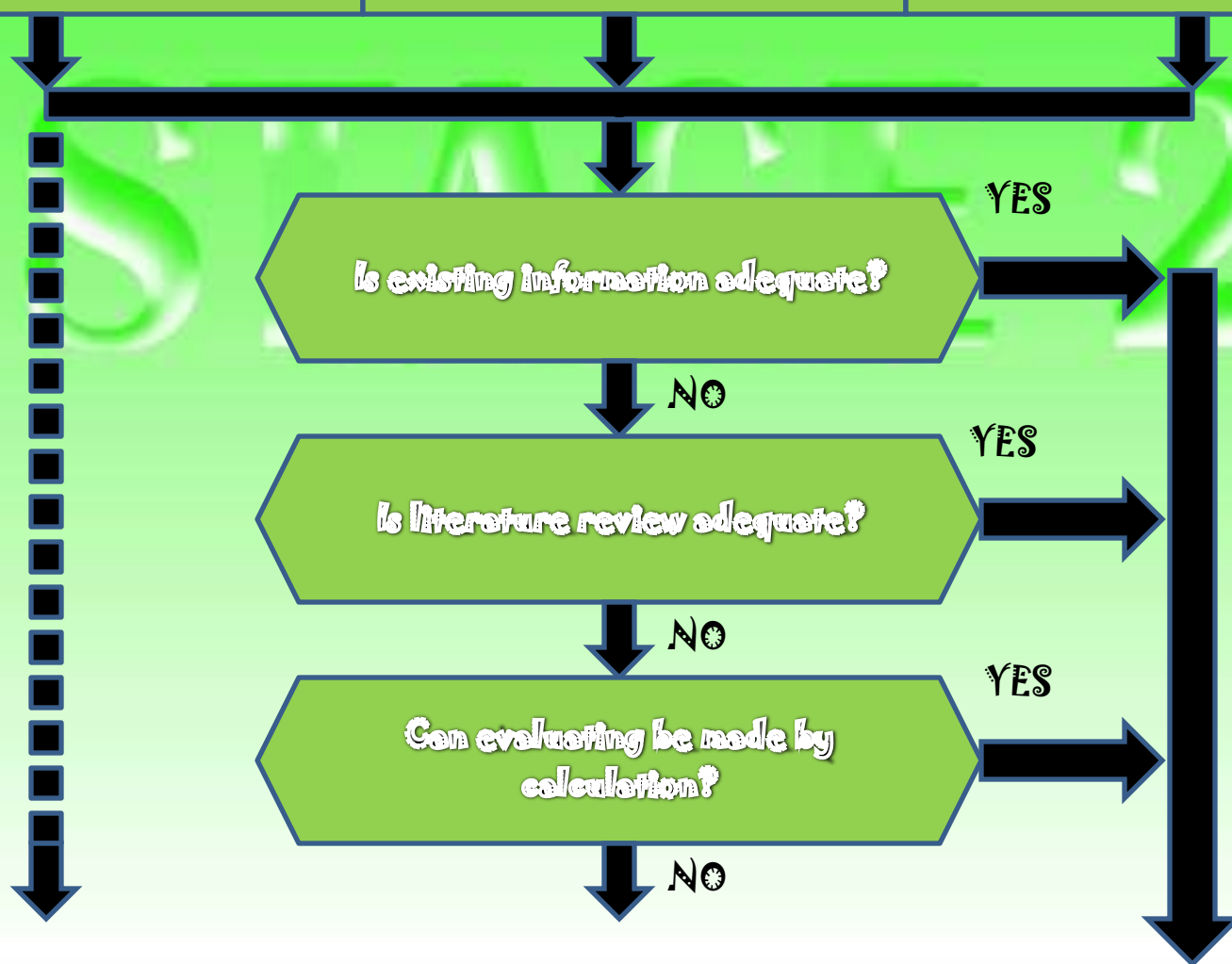


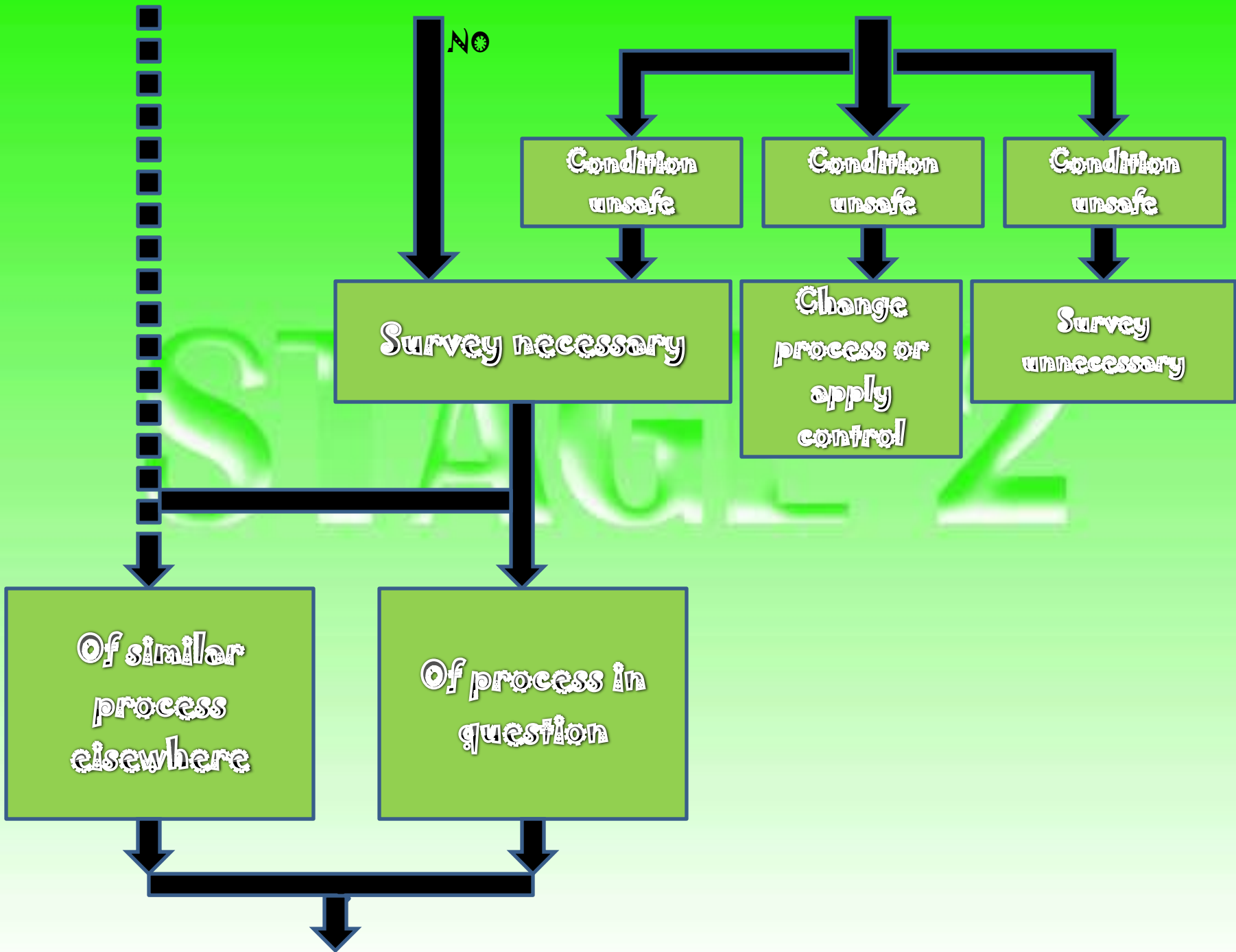
Define Objective

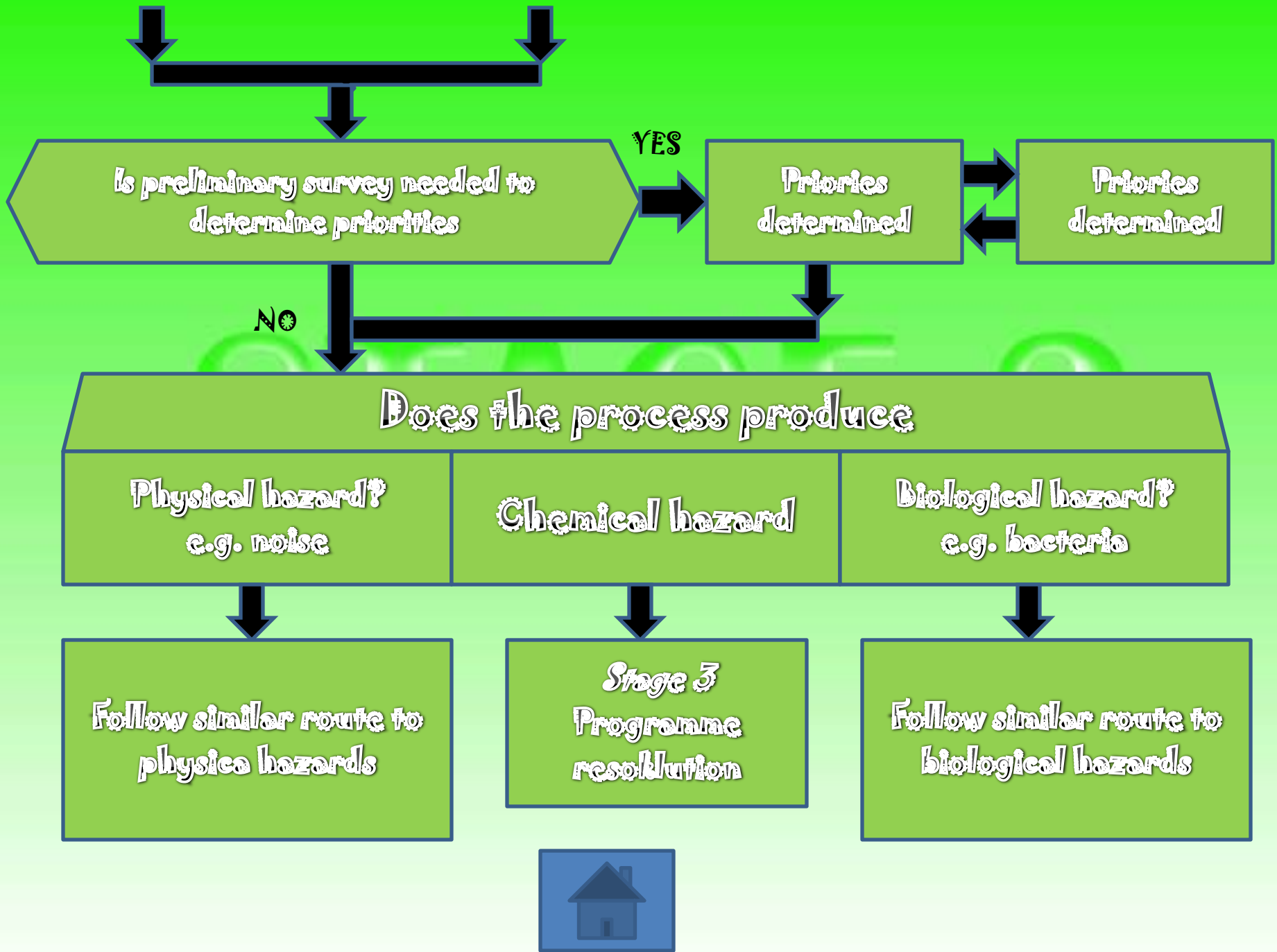
To design new process

To design process changes

To assess existing process







Chemical Hazard

Internal, by

Mouth

Skin

Lungs

Internal, by

Explosion & Fire

To eyes

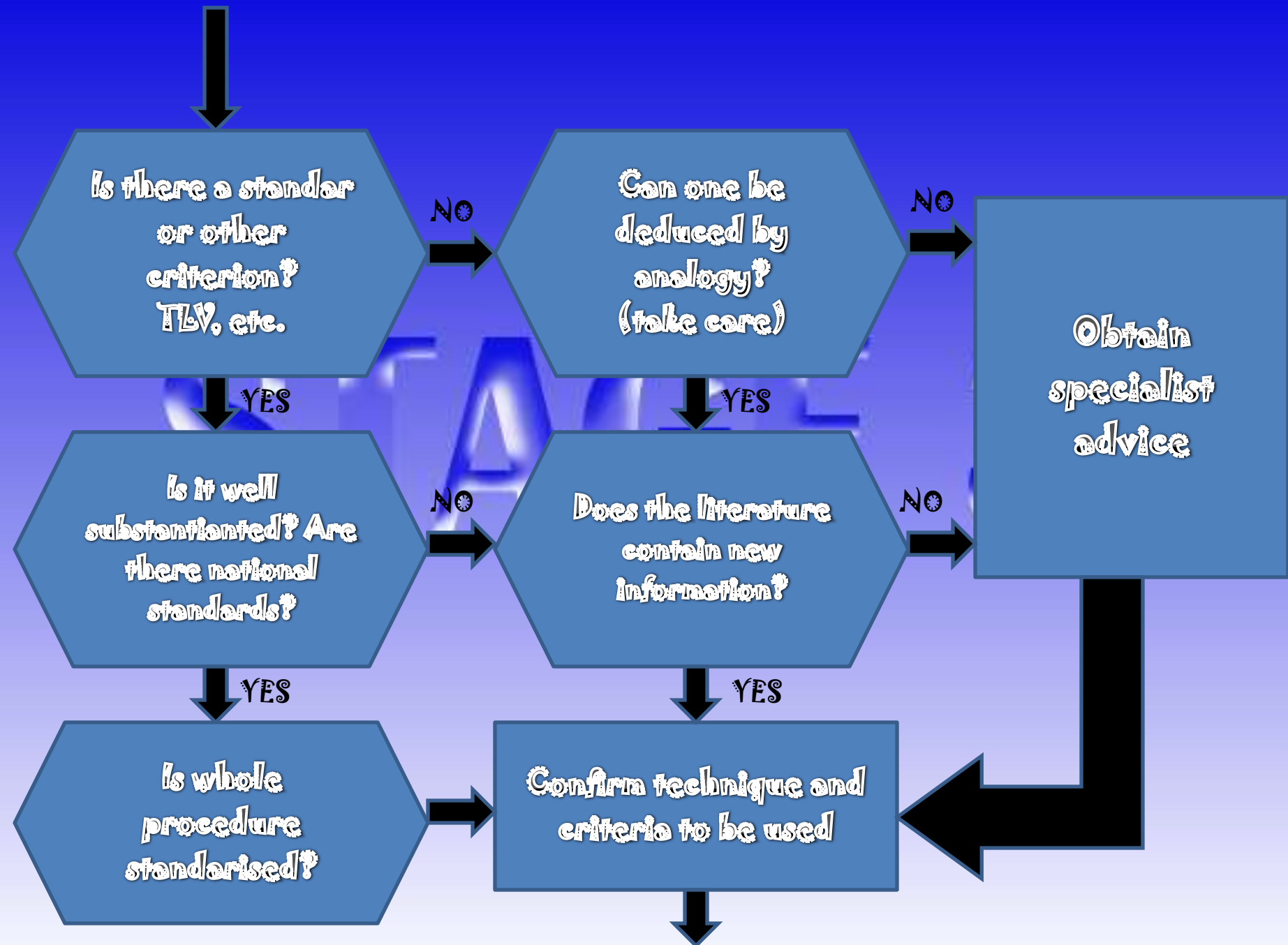
To Skin

Assess & Control

The air contact

Assess & Control

Criteria review



Is there a standard or other criterion? TUV, etc.

YES

NO

Can one be deduced by analogy? (take care)

YES

NO

Is it well substantiated? Are there national standards?

YES

NO

Does the literature contain new information?

YES

NO

Is whole procedure standardised?

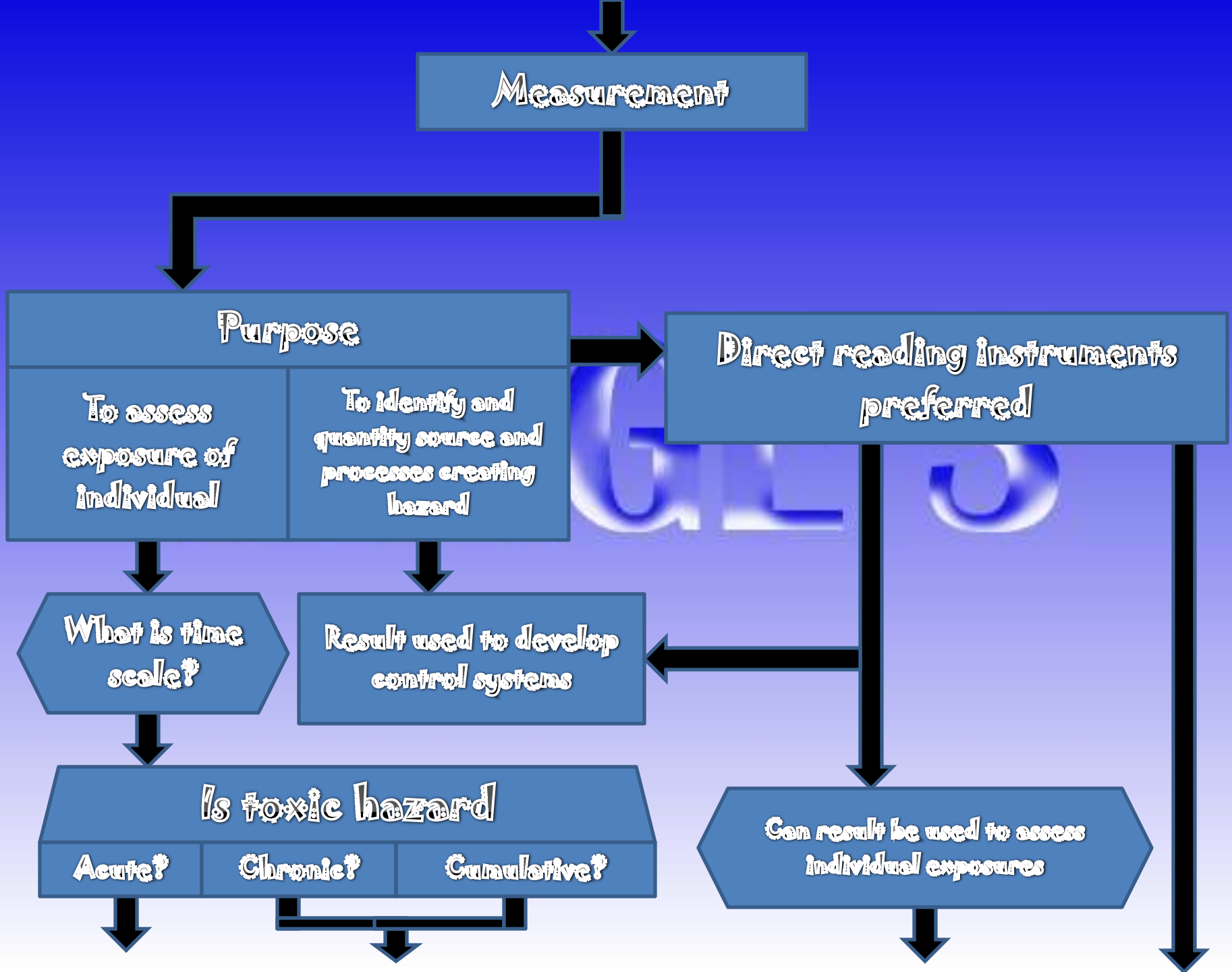
YES

NO

Confirm technique and criteria to be used

Obtain specialist advice

NO



Measurement

Purpose

To assess exposure of individual

To identify and quantify source and processes creating hazard

Direct reading instruments preferred

What is time scale?

Result used to develop control systems

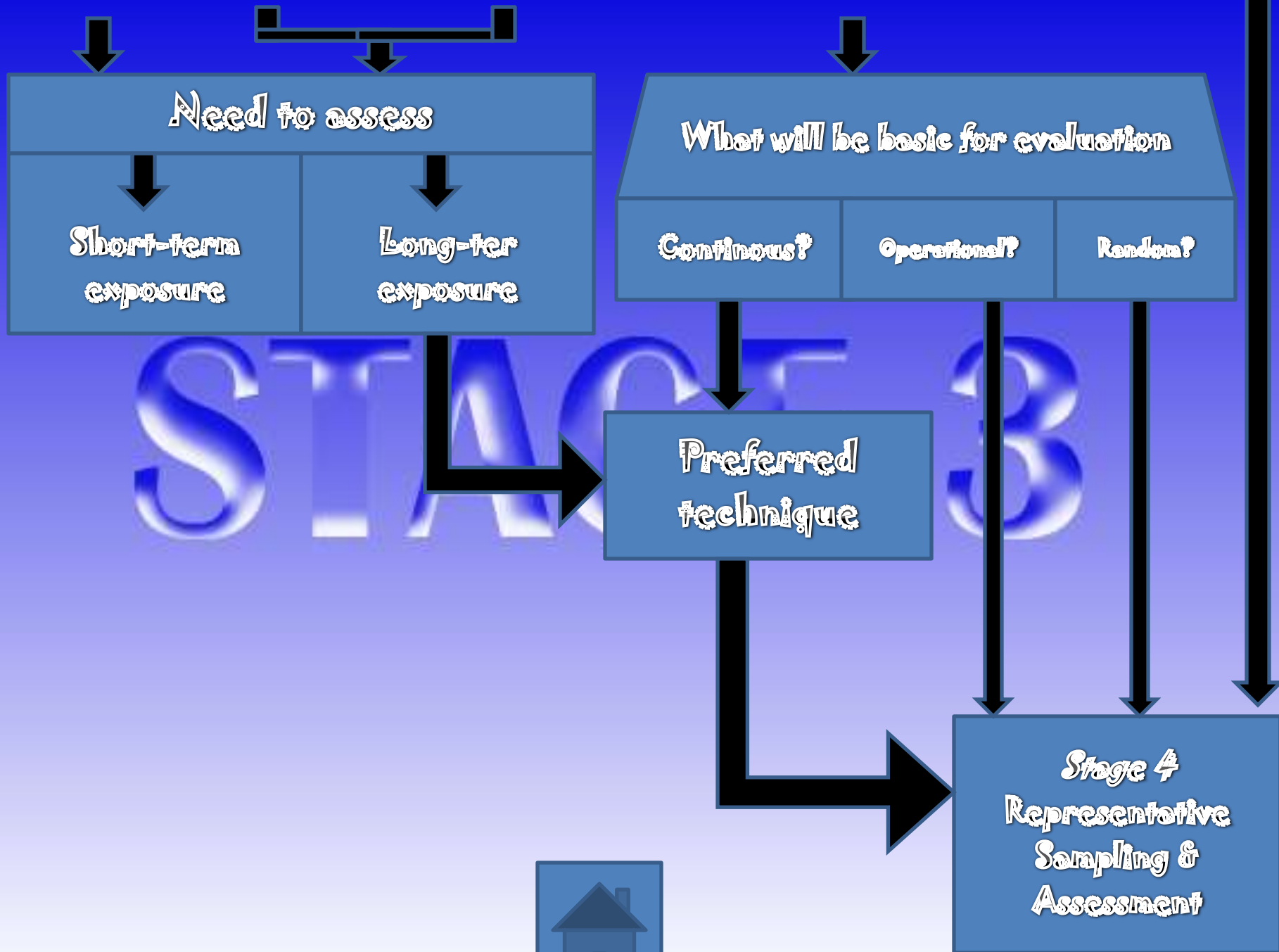
Is toxic hazard

Acute?

Chronic?

Cumulative?

Can result be used to assess individual exposures?



Preferred Technique

For intake

For intake

For exposure

Environmental

Media

Blood

(Breath)

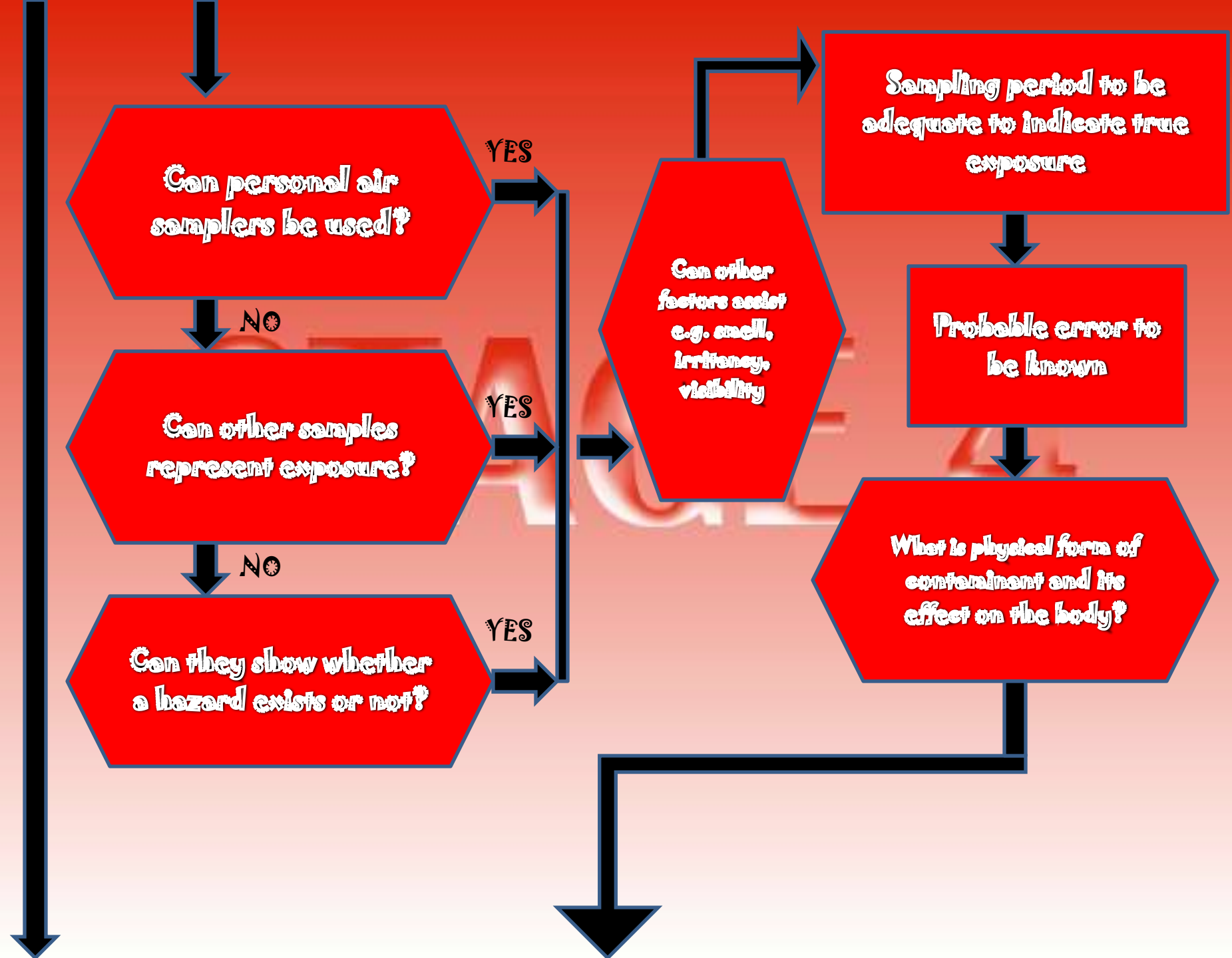
Blood

Media

Air

Surface

Liquid & solid
wastes



Can personal air samplers be used?

YES

NO

Can other samples represent exposure?

YES

NO

Can they show whether a hazard exists or not?

YES

Can other factors assist e.g. smell, irritancy, visibility?

Sampling period to be adequate to indicate true exposure

Probable error to be known

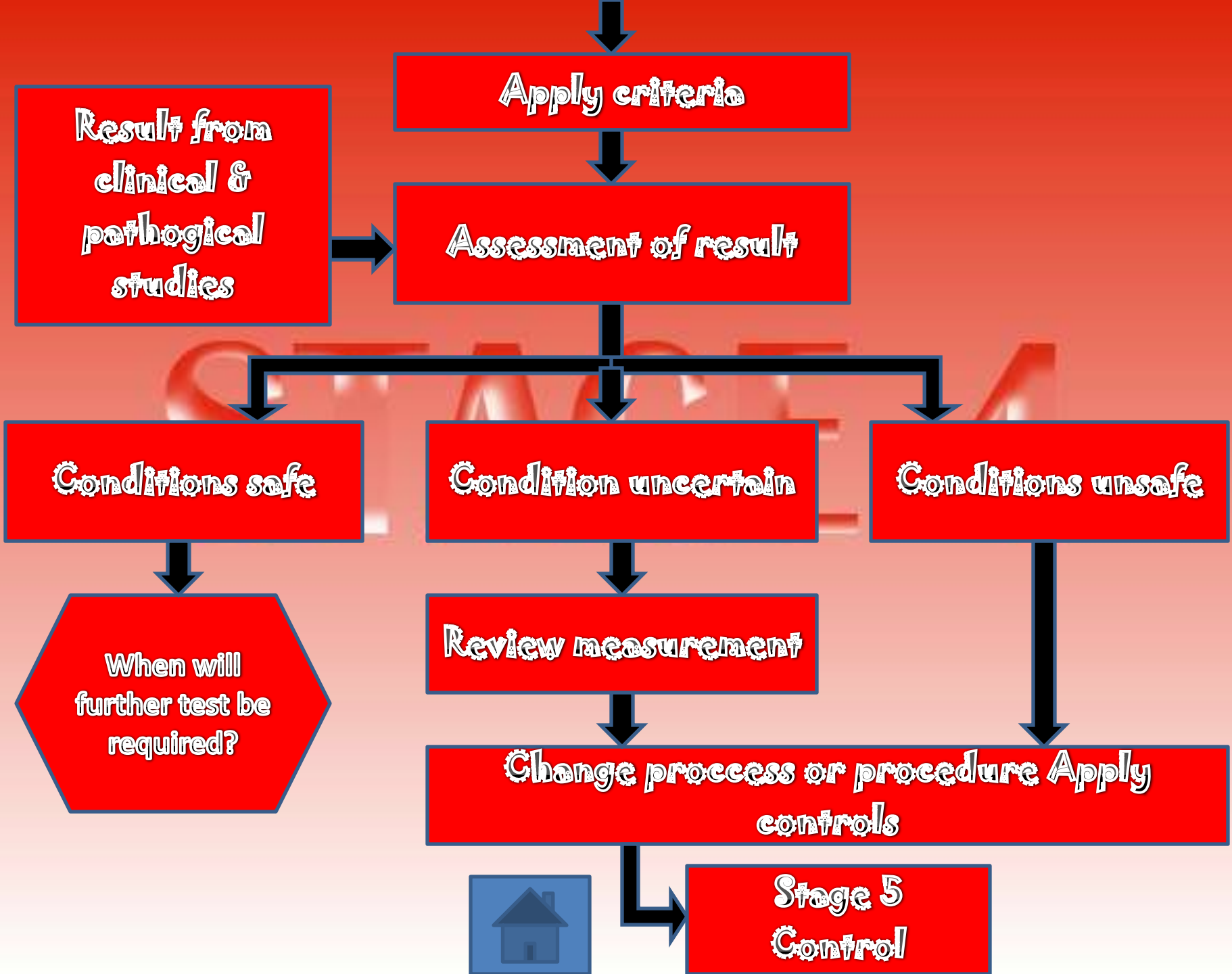
What is physical form of contaminant and its effect on the body?

Dust that damage the lungs	Asbestos	Dust that damage other organs	Fumes	Mists	Vapours & gases
Collect only respirable dust		Collect all airborne material			
Collect on filter after removing coarse dust with cyclone or elutriator, weigh & analyse	Collect on filter for microscopy, special technique to identify mineralogical type	Generally collect on filter, analyse in field or laboratory, some special techniques available			Collect on adsorber, elute & analyse in laboratory, collect in impingers or bubblers & titrate, some physical instruments available

Result from biological measurement

Result from environmental measurement





Apply criteria

Result from
clinical &
pathological
studies

Assessment of result

Conditions safe

Condition uncertain

Conditions unsafe

When will
further test be
required?

Review measurement

Change process or procedure
Apply
controls

Stage 5
Control

**Result of environment
assessment**

Decide control objective

SELECTION OF CONTROL SYSTEM

1st Choice

**Automation,
alternative
fabrication
methods**

**Seek expert
advice**

2nd Choice

**Substitute
materials,
methods or work
routines**

**e.g. water for
organic solvent,
damp down dust**

3rd Choice

**Plant layout,
enclosure,
remote control**

**Consider
location, time &
distance**

4th Choice

**Local extract
ventilation
LEV, hoods,
booths,
ventilated
benchtop**

**Consider
location,
direction and
timescale of all
emissions**

5th Choice

**Displacement
ventilation**

**Consider
airflow,
convection,
cross-draught**

6th Choice

**Dilution
ventilation**

**Consider
"leaky"
formulas, make-
up air**

7th Choice

**Personal
protection, e.g.
respirators, air
goods**

**Consider
protection
factor, duration
of use**

