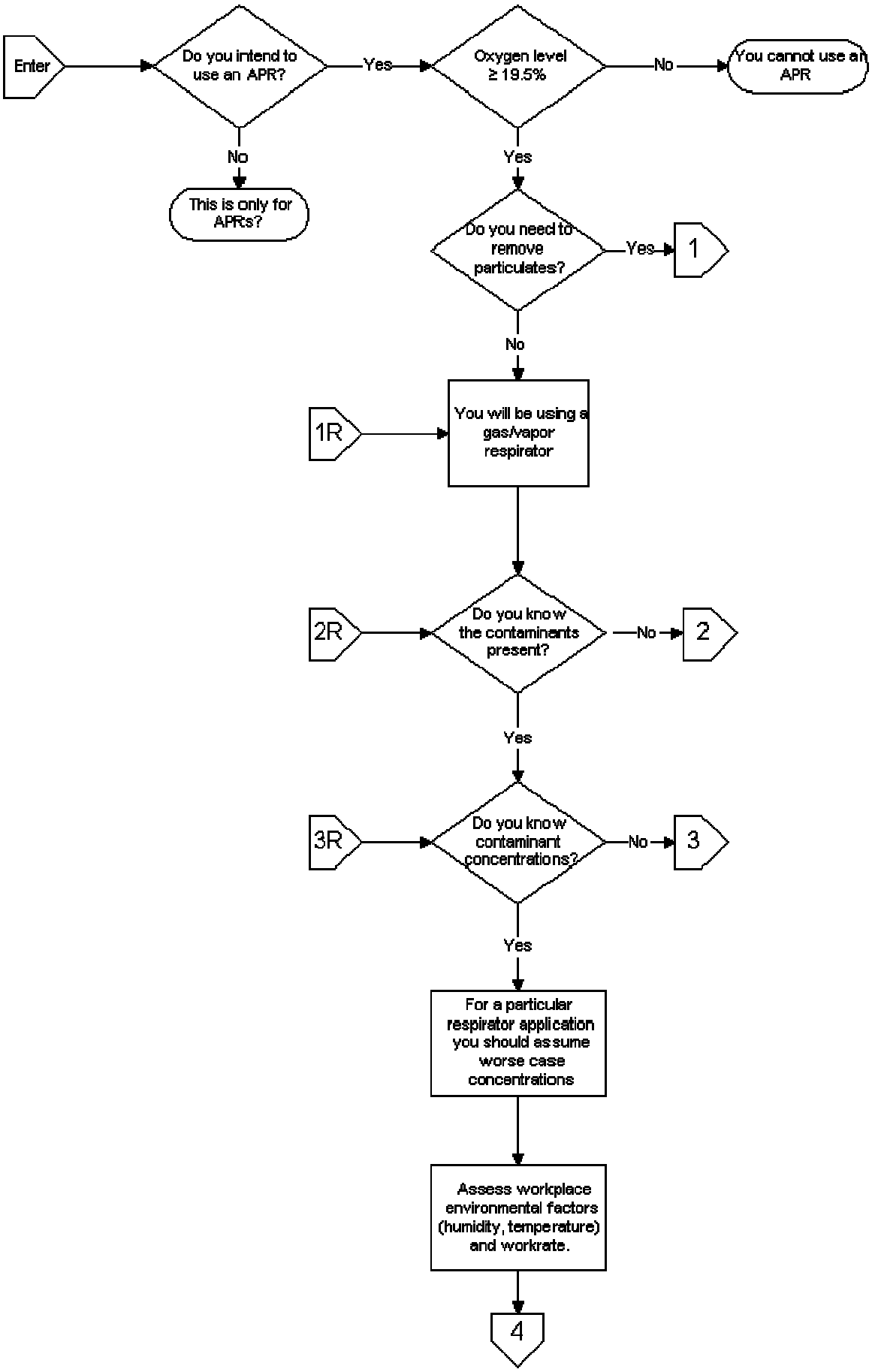
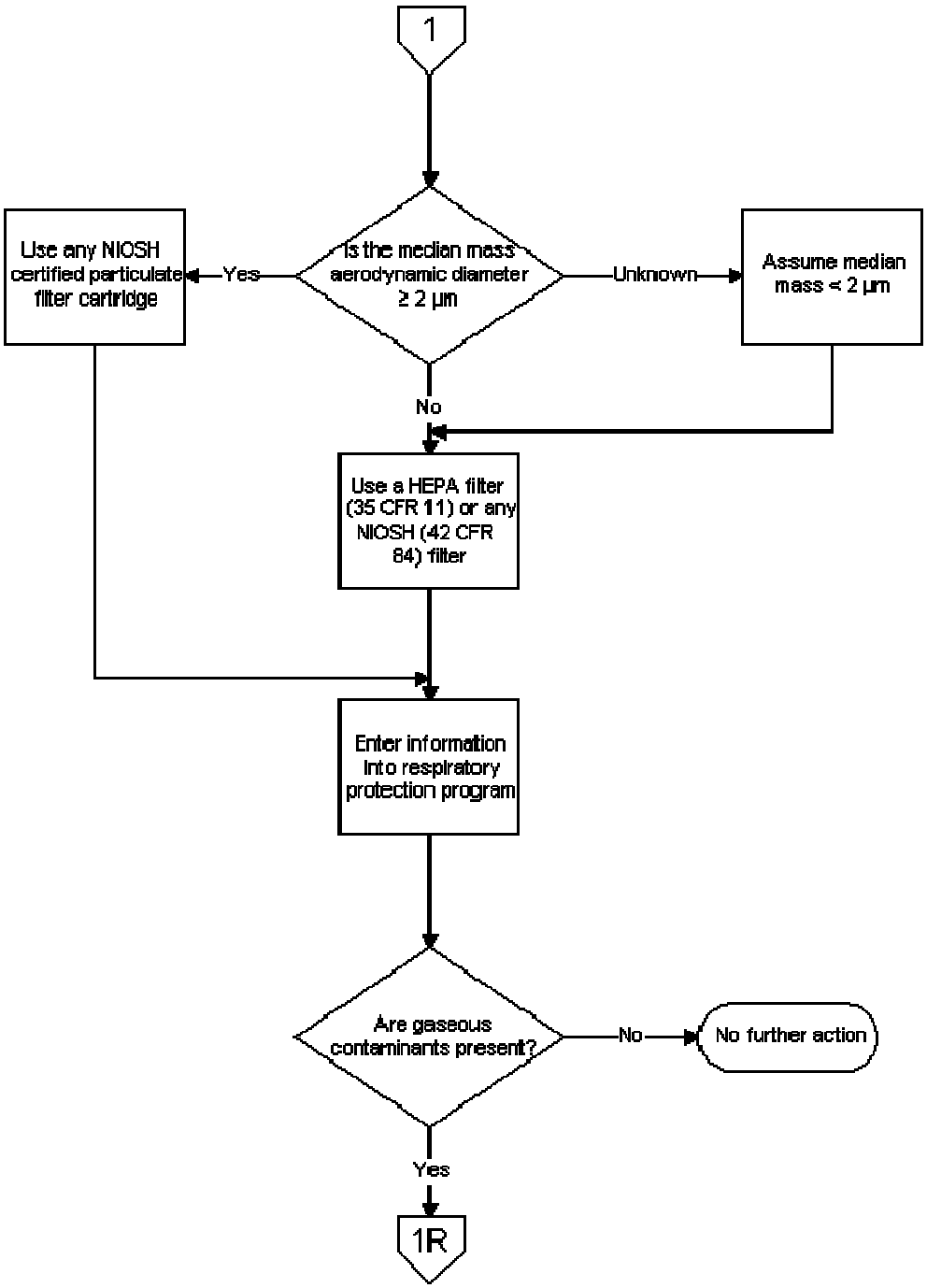
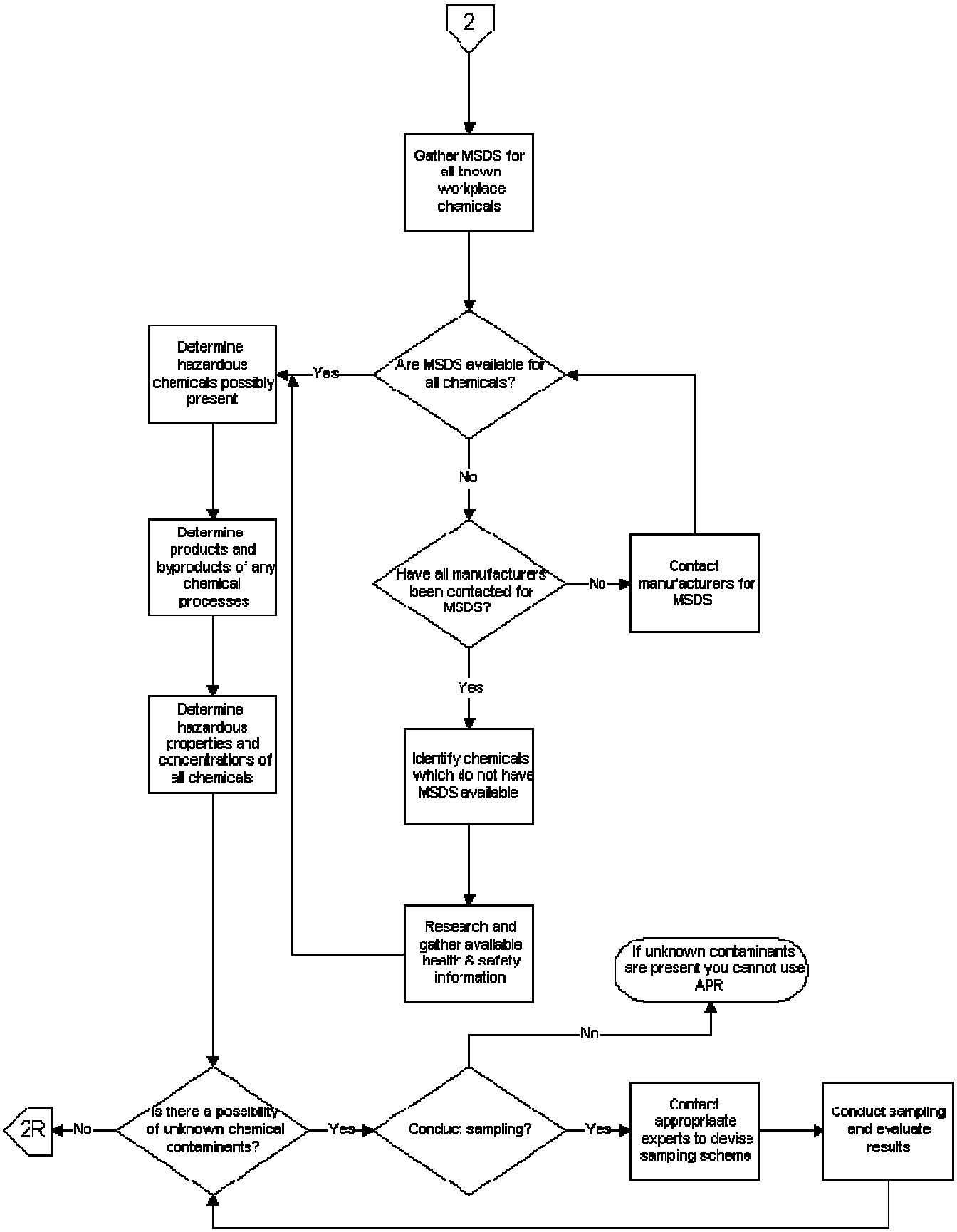
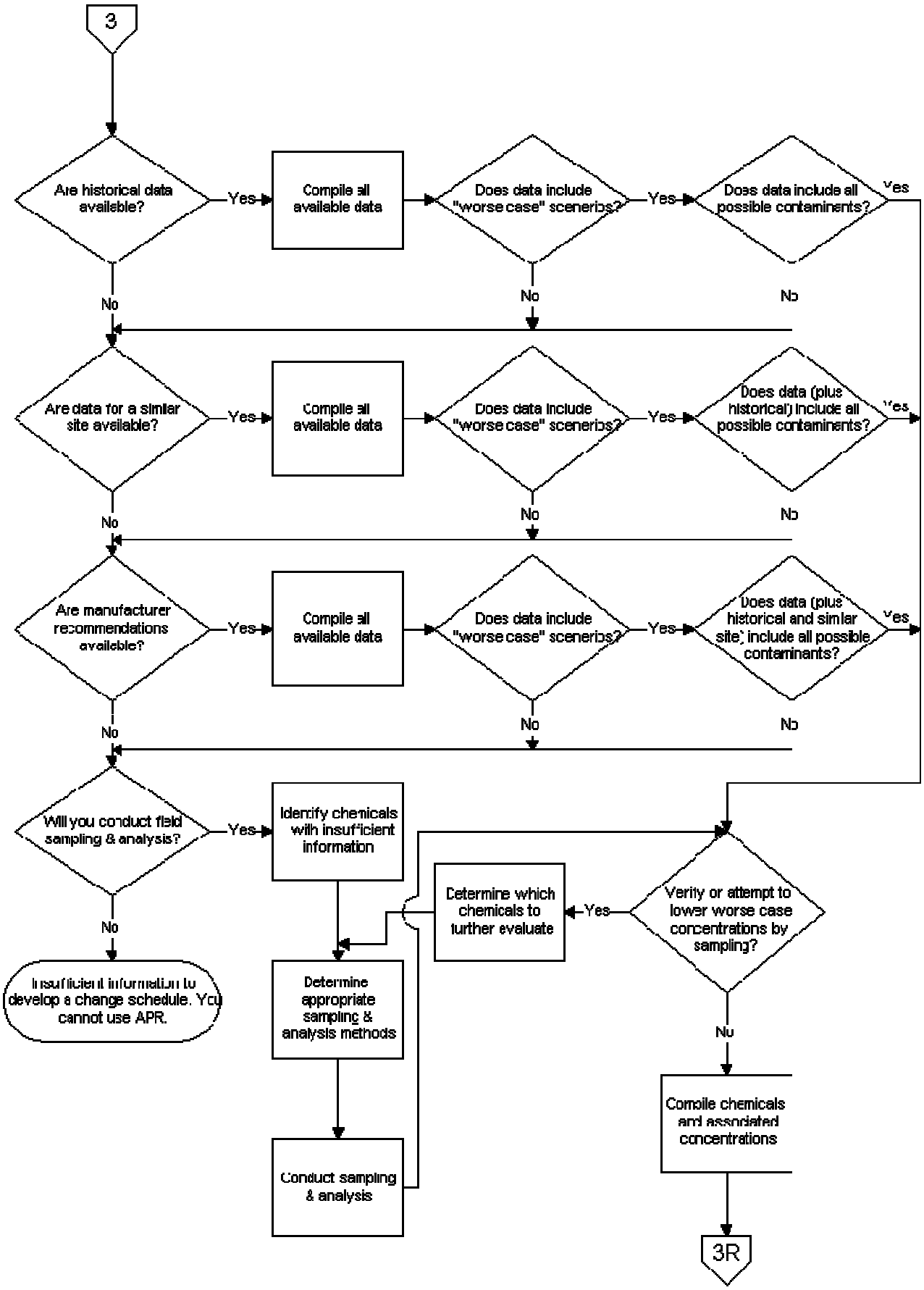
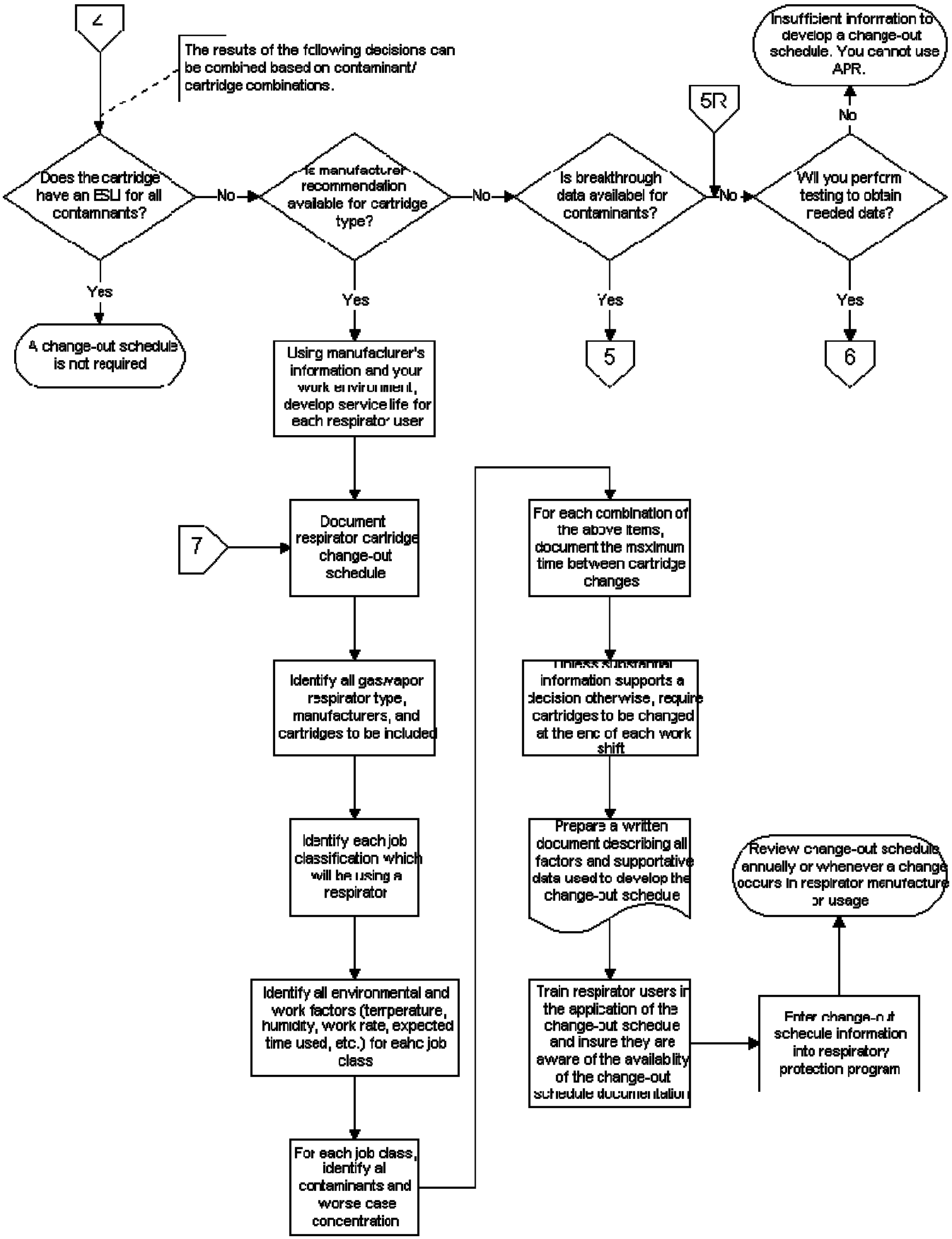
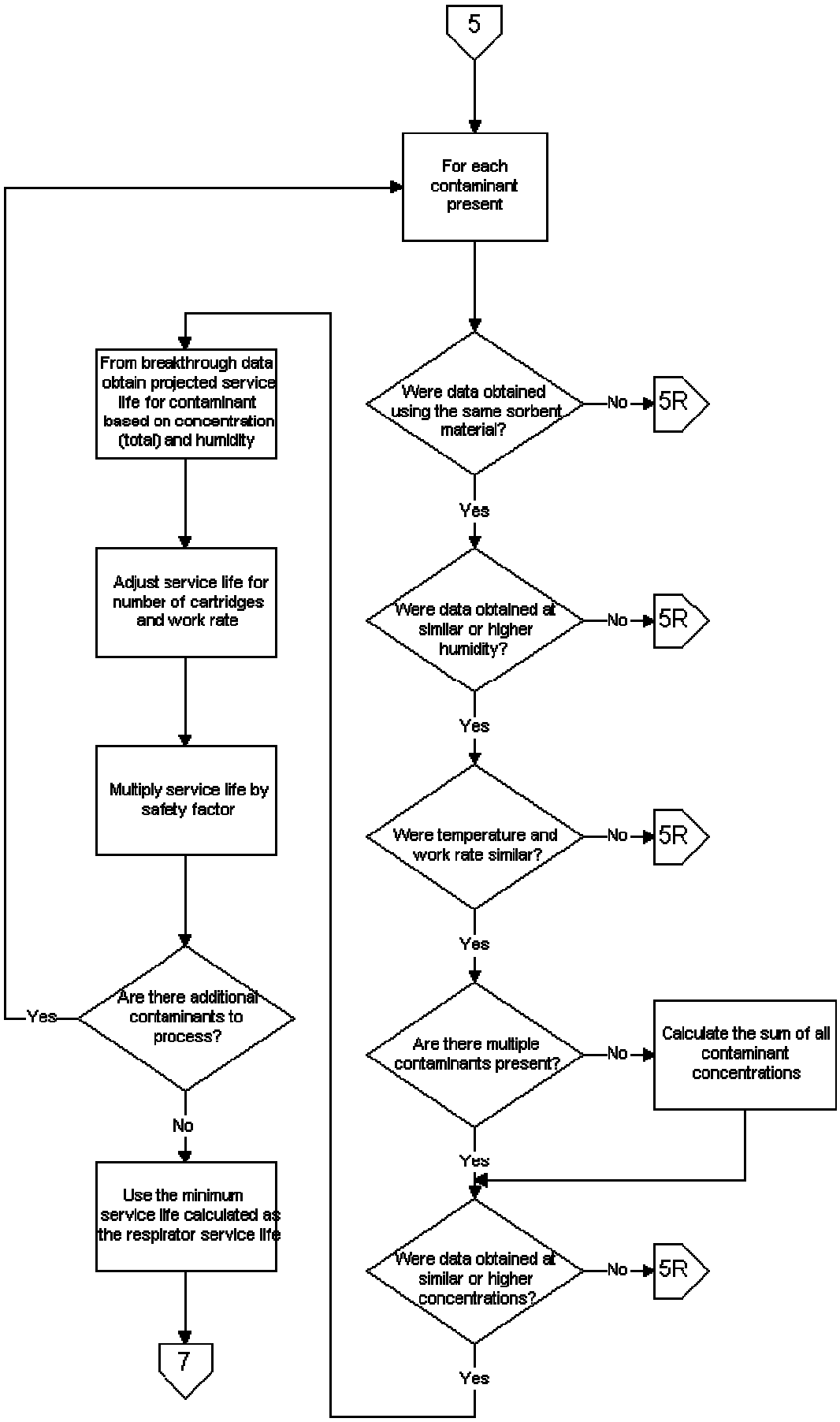

Enter
Do you intend to use an APR?
Yes
No
This is only for APRs?
Oxygen level ≥ 19.5%
No
You cannot use an APR
Yes
Do you need to remove particulates?
Yes
1
No
1R
You will be using a gas/vapor respirator
2R
Do you know the contaminants present?
No
2
Yes
3R
Do you know contaminant concentrations?
No
3
Yes
For a particular respirator application you should assume worse case concentrations
Assess workplace environmental factors (humidity, temperature) and workrate.
4

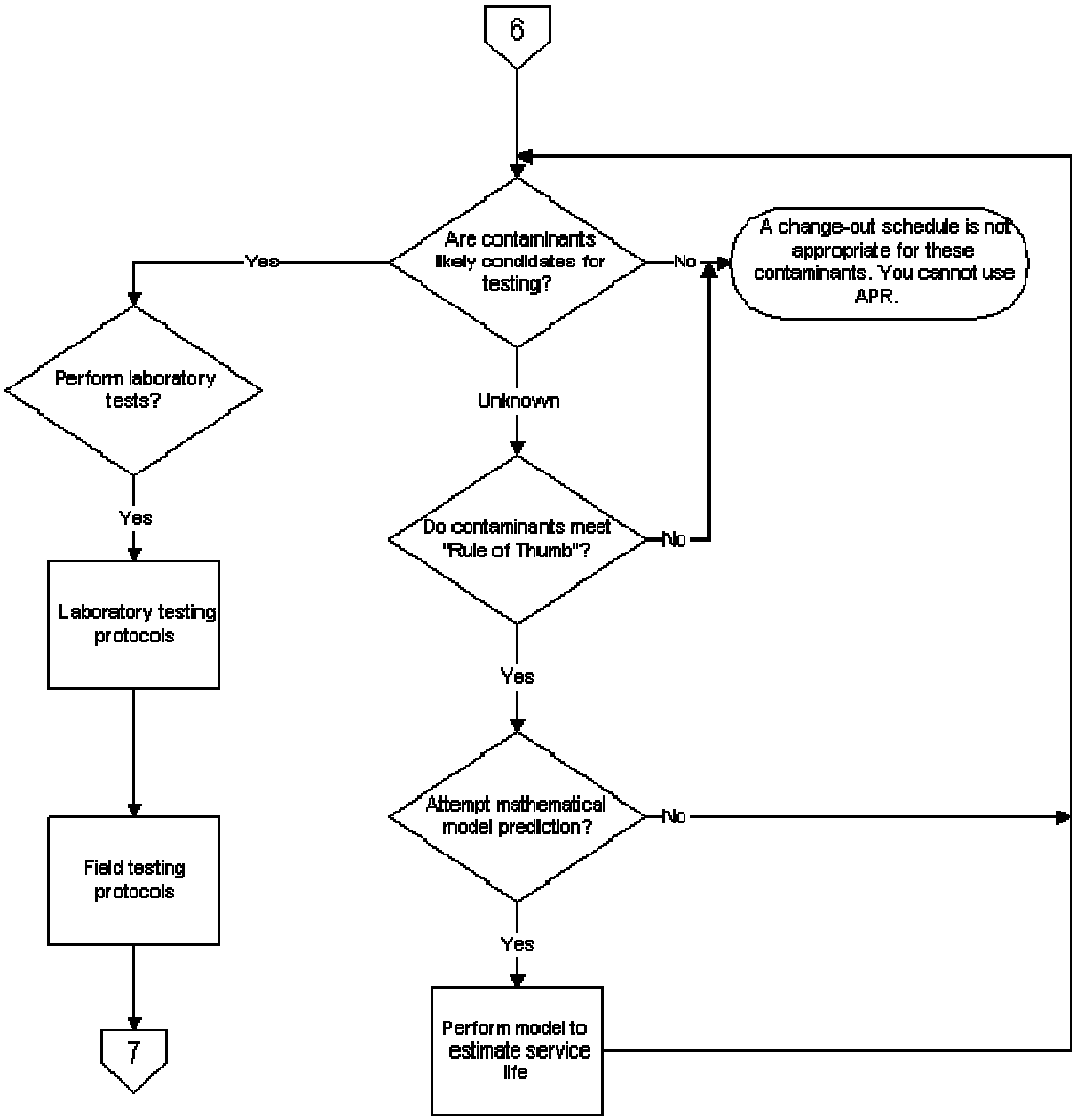

1
Is the median mass aerodynamic diameter ≥ 2 µm
Yes
Use any NIOSH certified particulate filter cartridge
Unknown
Assume median mass < 2 µm
No
Use a HEPA filter (35 CFR 11) or any NIOSH (42 CFR 84) filter
Enter information into respiratory protection program
Are gaseous contaminants present?
No
No further action
Yes
1R


2
Gather MSDS for all known workplace chemicals
Are MSDS available for all chemicals?
Yes
Determine hazardous chemicals possibly present
No
Have all manufacturers been contacted for MSDS?
No
Contact manufacturers for MSDS
Yes
Identify chemicals which do not have MSDS available
Research and gather available health & safety information
Determine products and byproducts of any chemical processes
Determine hazardous properties and concentrations of all chemicals
If unknown contaminants are present you cannot use APR
No
Is there a possibility of unknown chemical contaminants?
No
2R
Yes
Conduct sampling?
Yes
Contact appropriate experts to devise samping scheme
Conduct sampling and evaluate results


3
Are historical data available?
Yes
Compile all available data
Does data include "worse case" scenerios?
Yes
Does data include all possible contaminents?
Yes
No
No
No
Are data for a similar site available?
Yes
Compile all available data
Does data include "worse case" scenerios?
Yes
Does data (plus historical) include all possible contaminents?
Yes
No
No
No
Are manufacturer recommendations available?
Yes
Compile all available data
Does data include "worse case" scenerios?
Yes
Does data (plus historical and similar site) include all possible contaminants?
Yes
No
No
No
Will you conduct field sampling & analysis?
Yes
Identify chemicals with insufficient information
No
Insufficient information to develop a change schedule. You cannot use APR.
Determine which chemicals to further evaluate
Yes
Verify or attempt to lower worse case concentrations by sampling?
Determine appropriate sampling & analysis methods
No
Compile chemicals and associated concentrations
Conduct sampling & analysis
3R


2
The results of the following decisions can be combined based on contaminant/ cartridge combinations.
Does the cartridge have an ESLI for all contaminants?
No
Is manufacturer recommendation available for cartridge type?
No
Is breakthrough data availabel for contaminants?
No
Will you perform testing to obtain needed data?
No
Insufficient information to develop a change-out schedule. You cannot use APR.
5R
Yes
A change-out schedule is not required
Yes
Using manufacturer's information and your work environment, develop service life for each respirator user
Yes
5
Yes
6
7
Document respirator cartridge change-out schedule
Identify all gas/vapor respirator type, manufacturers, and cartridges to be included
Identify each job classification which will be using a respirator
Identify all environmental and work factors (temperature, humidity, work rate, expected time used, etc.) for eahc job class
For each job class, identify al contaminants and worse case concentration
For each combination of the above items, document the msximum time between cartridge changes
Unless substantial information supports a decision otherwise, require cartridges to be changed at the end of each work shift
Prepare a written document describing all factors and supportative data used to develop the change-out schedue
Train respirator users in the application of the change-out schedue and insure they are aware of the availablity of the change-out schedule documentation
Enter change-out schedule information into respiratory protection program
Review change-out schedule annually or whenever a change occurs in respirator manufacture or usage


5
For each contaminant present
Were data obtained using the same sorbent material?
No
5R
Yes
Were data obtained at similar or higher humidity?
No
5R
Yes
Were temperature and work rate similar?
No
5R
Yes
Are there multiple contaminants present?
No
Calculate the sum of all contaminant concentrations
Yes
Were data obtained at similar or higher concentrations?
No
5R
Yes
From breakthrough data obtain projected service life for contaminant based on concentration (total) and humidity
Adjust service life for number of cartridges and work rate
Multiply service life by safety factor
Are there additional contaminants to process?
Yes
No
Use the minimum service life calculated as the respirator service life
7


6
Are contaminants likely condidates for testing?
Yes
No
A change-out schedule is not appropriate for these contaminants. You cannot use APR.
Perform laboratory tests?
Unknown
Yes
Do contaminants meet "Rule of Thumb"?
No
Laboratory testing protocols
Yes
Attempt mathematical model prediction?
No
Field testing protocols
Yes
Perform model to estimate service life
7