

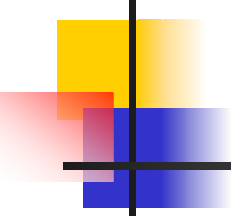


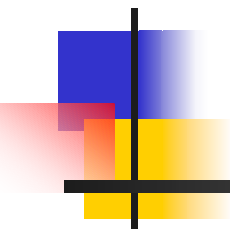
# Exposure Assessment in Occupational Epidemiology

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- Introduction to Exposure Assessment in Occupational Epidemiology
  - Introduction to Job-exposure Matrix of Benzene in Shanghai



# Introduction to Exposure Assessment in Occupational Epidemiology

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- Purpose
  - Components
  - Documents-information
  - Methods
  - Classify the level of exposure (chemical, biological and physical substances)



# Purpose

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- To identify the determinants of exposure variability within the study population
- To classify study subjects accurately with respect to their level of exposure



# Components

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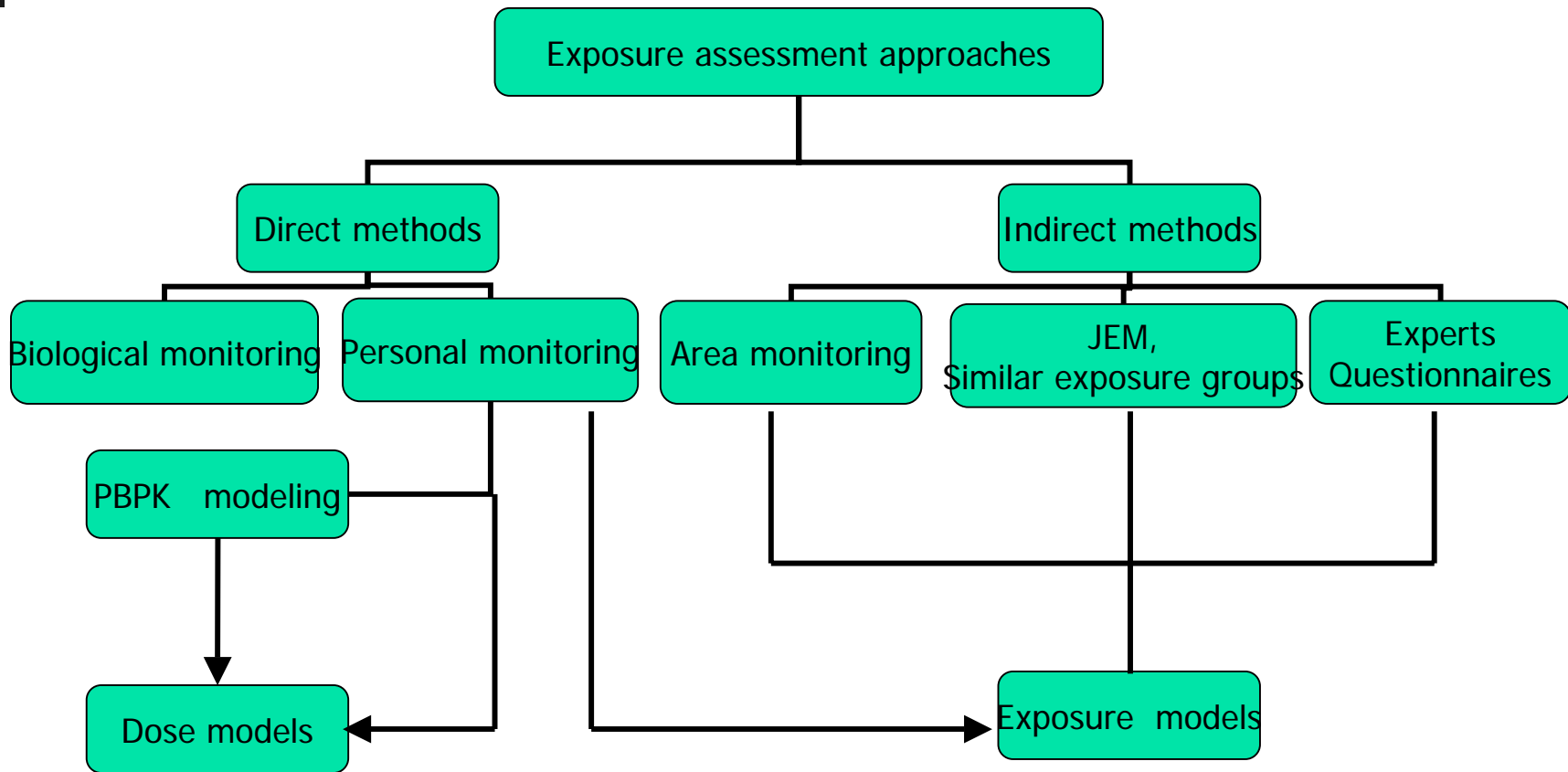
- The design of the study
- Data collection
- The interpretation of the data



# Documents-information

<b>Documents</b>	<b>Information</b>
Register of stocking	Raw materials
Register of output	Products
Process	Equipments, work methods
Register of work	where, when, what
Record of monitoring	Concentration
Record of biological monitoring	dose
System of SHE	How to use protect facility and individual articles
questionnaires	Work history
<b>Surrogate Work Site</b>	<b>Concentration</b>
Visit experts	All kinds of information
References	All kinds of information

# Methods





# Classify the Level of Exposure

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- Qualitative
- Half-quantitative
- Quantitative



# Exposure Dimensions

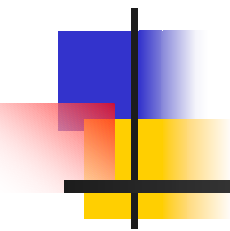
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- The actual nature of the exposure
- Duration (e.g. in hours or days)
- Concentration (e. g. in  $\text{mg}\cdot\text{m}^{-3}$ )
- Frequency (e. g. times per week)



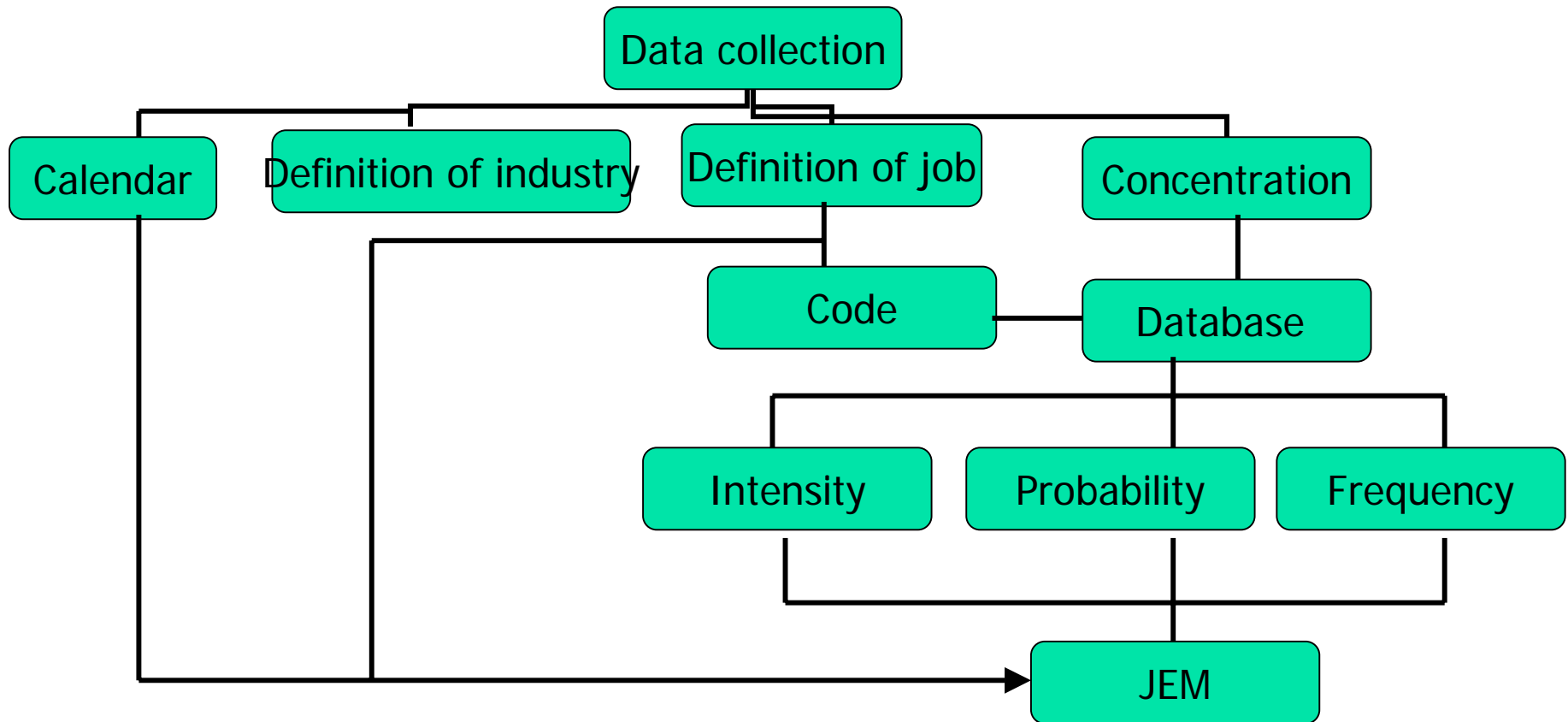
# The Index of Cumulative Exposure

Index	Formula
Cumulative exposure index (CEI)	$D \cdot C \cdot F$
Mean Grade (MG)	$(D \cdot C \cdot F) / TTE$
Highest Grade (HG)	Highest C in 7 days
TWA	$(D \cdot C \cdot F) / \text{total time of the hired}$
Total time of exposure (TTE)	<b>D</b>



# Introduction to Job-exposure Matrix of Benzene in Shanghai

# The Flow of JEM





# The Criteria of Rating

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## ■ Intensity

None	0	No exposure
Low	1	>0 and <1/2 MAC value
Medium	2	1/2 MAC and MAC value
High	3	>MAC value

## ■ Probability

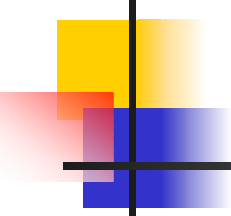
None	0	No exposure
Low	1	>0 and <25% prevalence of exposure
Medium	2	25% and 75% prevalence of exposure
High	3	>75% prevalence of exposure



# Analyses on Determinants of Intensity Rating

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- Role
- Fate
- Total quantity
- Handled Quantity
- Open/close
- Manual/mechanic

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- Hood/ventilation
  - Surroundings
  - In/outdoor
  - Temperature
  - Personal hygiene

# Assignment of Intensity of Benzene by Industry/Job/Calendar-periods

	Calendar-periods						
Industry/job	1953 1959	1960 1964	1965 1969	1970 1974	1975 1979	1980 1984	1985 1989
Industry/job 1							
Industry/job 2							
Industry/job n							



# Suggestions to Exposure Assessors

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- Validations studies
- Quality control
- Confidence of information



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- Thank You!

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