

CHM 216-4
Course Number

INTRODUCTION TO INDUSTRIAL HYGIENE
Course Name

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

PHILOSOPHY GOALS:

COURSE OUTLINE

Course Title: INTRODUCTION TO INDUSTRIAL HYGIENE

Code No.: CHM 216-4

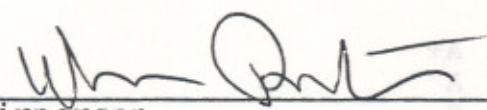
Program: PULP & PAPER ENG. TECH.

Semester: TWO

Date: MAY 1988

Author: D. HEGGART

New: _____ Revision: _____

APPROVED:  Chairperson

Date August 3/88

EVALUATION: Term Tests, Quizzes, Assignments, Midterm, Final Exam

INTRODUCTION TO INDUSTRIAL HYGIENE

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PHILOSOPHY/GOALS:

The goal of this course is to give the student a comprehensive knowledge of the principles of industrial hygiene - Recognition, Evaluation and Control Methods - to qualify him/her to function in the Health and Safety Department of a Pulp or Paper mill.

METHOD OF ASSESSMENT (GRADING METHOD):

Student will be evaluated on the basis of their performance on tests, literature-search projects, assignments, final exam and class participation.

TEXTBOOK(S):

Fundamentals of Industrial Hygiene, 2nd ed., Olishifski, J.B. ed., National Safety Council (1979)

The Occupational Health & Safety Act (1978)

REFERENCE TEXTS:

1. "The Industrial Environment - Its Evaluation and Control" U.S. Dept. of Health, Education and Welfare (1973)
2. "Basic Industrial Hygiene" - American Industrial Hygiene Assoc. (1975)

METHOD OF GRADING:

Grade	90%+	A+
80 - 89%		A
70 - 79%		B
60 - 69%		C

EVALUATION: Term Tests, Quizzes, Assignments, Midterm - 50%
 Final Exam - 50%

PRINCIPLES OF INDUSTRIAL HYGIENE

INTRODUCTION

AIHA definition of Industrial Hygiene
Historical Developments, ACGIH, AIHA, OSH Act, NIOSH
Bills 139 and 70, OSHA 1978
Personnel responsible for Occupational Health Programs

PRINCIPLES OF INDUSTRIAL HYGIENE

Recognition of potential hazards assimilation of process and procedures data

Evaluation - preliminary survey
- environmental survey

Control - engineering
- administrative

Toxicity vs Hazard

CLASSIFICATION OF STRESSES

- A. Chemical: gases, vapours, dusts
- B. Physical: noise, radiation, thermal, stresses, pressure, vibration
- C. Biological: bacteria, fungi, moulds, viruses
- D. Ergonomic

A. Chemical Stresses

1. Recognition

Dose - response relationship
LD50, LC50 concepts
Routes of entry
Mode of action
TLV concept
Documentation of the TLV
Classification of toxic effects

2. Evaluation

Preliminary survey
Environmental survey
Grab sampling - bags
 syringes
 bombs
 detector tubes
 direct-reading instruments
 hi-vol samples

Integrated sampling

- (a) personal and personnel sample bags
- absorbant tubes
- paper tapes
- long-term detector tubes
- gas badges
- filters
- cyclones
- (b) area or "fixed-station" monitoring

3. Control

- Substitution
- Isolation, segregation
- Local exhaust, ventilation
- Dilution ventilation
- Personal protective devices
- Area monitoring as a control method
- Work rotation
- Education and training

B. Physical Stresses

1. Noise

1. Recognition

- Classification of hearing loss
- Effects of excessive noise
- Subjective aspects of sound
- Hazards associated with hearing loss
- Principles of sound
- Sound pressure and sound pressure level
- Combination of sound pressure levels
- Frequency bandwidths, octave bands
- Equal loudness contours
- Weighting scales
- Noise exposure guidelines
- Noise dosage

2. Evaluation

- Sound level meters-types
- Calibrators
- Octave band analyzers
- Dosimeters

The following chapters from Fundamentals of Industrial Hygiene serve as the basis for this course:

3. Control

Substitution		
Isolation, segregation	-	1
Specifications on new equipment purchases		
Maintenance	-	6
Acoustical treatment		
Enclosures, noise alteration at source	-	7
Andiometric examinations		
Work rotation	-	12
Personal protective devices		
Noise conservation programs	-	16

2. Ventilation

- basic design	-	18
- parts of a system		
- terminology	-	19
- dilution		
- local exhaust	-	20
- K valve		
- dilution for fire & explosion control		
- TLV vs. LEL		
- inerting	-	22

C. Legislation

- historical overview	-	4
- the occupation Health & Safety Act		
- regulations	-	9
- designated substances		

The following chapters from Fundamentals of Industrial Hygiene serve as the basis for this course:

- 1 - Fundamental Concepts
- 6 - Solvents
- 7 - Particulates
- 15 - Industrial Toxicology
- 16 - Evaluation
- 17 - Method of Evaluation
- 18 - Air Sampling Instruments
- 19 - Direct Reading Gas & Vapor Monitors
- 20 - Methods of Control
- 21 - Industrial Ventilation
- 22 - General Ventilation
- 23 - Respiratory Protective Equipment
- 4 - The Ear
- 9 - Industrial Noise