Disseminating Safety Concept through Education

Esma TOPRAK
Chief Chemical Engineer
Bogazici University
Chemical Engineering Department
Istanbul - TURKEY
Disseminating Safety Concept through Education

- Safety Training
- Accomplishments
- Plans for the Future
- Conclusion
SAFETY TRAINING PROGRAM

Date: April 23 - May 5, 2000
Sponsor Company: BP AMOCO Chemicals
Places of Visit:
  - BP AMOCO Chemicals Naperville Complex
    Naperville, Illinois USA
    Chicago, Illinois USA
  - BP AMOCO Chemicals Green Lake Complex
    Port Lavaca, Texas USA
IUPAC - UNIDO - UNESCO
SAFETY TRAINING PROGRAM

Topics Covered

- HSE Projects 2000, HSE Audits
- Product Stewardship
- Hazardous Waste, Waste Handling
  - Waste Definitions
  - Waste Clarifications
  - Waste Analysis
- Responsible Care
- Customer Support
- Emergency Response
- Site Safety
- Safety Reviews (Pre-Operation / Process)
IUPAC - UNIDO - UNESCO SAFETY TRAINING PROGRAM

Topics Covered ...continued

- Lab / Process Unit H&S Information Binders
- Quarterly Lab Tours
- Safety Inspectionss and Meetings
- Weekly Safety Checklist
- Chemical Hygiene Plan
- Incident Reports
- Emergency Operating Procedures (EOP)
- Standard Operating Procedures (SOP)
- Safety Sampling
- SOSO Review (Standing Order for Safe Operation)
SAFETY TRAINING PROGRAM

Topics Covered ...continued

- Area Rules and Regulations
- Critical Task Analysis
- Safety Recall Interviews
- Safety Handling and Storage Guides, Drills
Meetings Attended

- COCI Meeting, September 14-16, 2000, Montreal – CANADA
- COCI Meeting, July 3, 2001, Brisbane, AUSTRALIA
- COCI Meeting, June 8, 2002, Sundsvall, SWEDEN
- Review Meeting of V. National Congress of Chemical Industries (June 5, 2003 Ministry of Industry, Ankara – TURKEY, Work on the suc-committee of education, research and development
- COCI Meeting and Safety Workshop, August 13-15 2003, Ottawa – CANADA
- COCI Meeting, May 9-11 2004, Brussels - BELGIUM
Accomplishments

- Personal Protective Equipment (PPE) for students and staff
- Departmental Safety Manual
- Seminars on Safety practices for new students (each semester)
- Short Courses on Safety to new teaching assistances (each semester)
- An HSE Team established
Accomplishments

... continued

- Lab / Process Unit Health and Safety Information
- Binders for each experiment on research work
  Including:
  - Instructions of using the binder
  - Standard operating procedures
  - MSDS (Material Safety Data Sheets) for each chemical used
  - Process and Instrumental Drawings
  - Utility Drawings
  - Inspections
  - Hazard Labels
  - Personal Protective Equipment
  - Audits
  - Manuals
  - Calibration Charts
Accomplishments

... continued

- Fire alarms installed in all labs
- Fixed Gas Cylinders and Cabinets to the walls (Earthquake Protection)
- Fire Escape Stairs (proposed)
- Infirmary in Chemical Eng. Dept. (proposed)
Accomplishments

... continued

- Training Technicians
- Safety Inspections
- Quarterly Lab Tours
- Weekly Safety Checklist
- Safety Meetings
  Done with teaching assistants and research assistants monthly
Plans for the Future

- **Safety Manual**
  - A. Accident Prevention for College and University Students
  - B. Accident Prevention for Faculty and Administrators
  - C. Accident Prevention for Highschool Students

- **Workshop on Safety in Chemical Production**
  
  *(Sponsor: UNESCO)*
SAFETY MANUAL
Accident Prevention for College and University Students

- Personal Protection
  - Eye Protection
  - Clothing
  - Gloves

Which would you rather wear?
SAFETY MANUAL
Accident Prevention for College and University Students

- Autoclave Safety
- Centrifuges
- Chemical Hazards
- Compressed Air
- Distillation Hazards
- Electrical Safety
- Gas Containers (Explosions)
  Gas Cylinders
- Fire (Prevention and Protection)
SAFETY MANUAL
Accident Prevention for College and University Students

- Flooding
- Noise and Hearing
- Glassware Handling
- Housekeeping
- Lifting and Carrying
- Mercury Spillage
- Microbiological and Biochemical Materials
- Fume Cupboards and Safety Cabinets
SAFETY MANUAL
Accident Prevention for College and University Students

- Reading Material Safety Data Sheets (MSDSs)
- Oil Baths
- Pippeting and Dispensing Dangerous Liquids
- Pressure Systems and Vessels
- Refrigeration
- Safety Showers
- Storage – Flammable Liquids
- Unattended Equipment – Overnight Running
- Valves, Service – Maintenance
- Ventillation
Organizing for accident prevention
Personal Protective Equipment
Labeling
Material Safety Data Sheets (MSDSs)
Preparing for Medical Emergencies
Reporting Accidents
Reducing Hazards
Inventory Management, Storage and Disposal
Conclusions

- Safety regulations are being developed in Turkey since 2000. (Health and Safety Regulations #4857 by Ministry of Social Security and Labor)
- Implementing safety practices are increasing among industry.
- Disseminating safety concept is becoming much more important since Turkey is getting ready to be a member of EU.

Therefore...
Chemical safety has become an important part of both college and university undergraduate teaching curriculum.
Academic chemistry laboratories are much safer places with fewer accidents and injuries.
Graduate students who gain safety concepts during their education, disseminate invaluable knowledge in their future academic as well as industrial work environment.
Doing things safely is NOT merely the RIGHT way to work - it is the ONLY way.