

USC Hazard Information – Compliance Database

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Agenda

- USC Background Information
- Why develop a database?
- Overall database structure
- Lessons learned
- Database forms
- Path Forward
- Does it make sense for your group?



USC Background Information

- USC Background Information
 - >50,000 Students & Staff
 - 11 campuses including Columbia (Main)
 - >18,500 rooms
 - >1500 labs & teaching rooms
 - Environmental Media
 - Hazardous waste
 - Biological/biohazard waste/select agents
 - Radioactive waste



USC Background Information - Continued

- Environmental Health & Safety Group
 - 17 team members
 - Environmental Health & Safety – 6.5
 - Radiation Safety – 5
 - Fire Safety - 4
 - Risk Management – 1.5
 - ISO 14001 EMS Registered August 2002
 - Green Campus Award 2003
 - Regulations SCDHEC, LLR (OSHA), CDC etc.



Top 10 reasons we developed a database

- 10. Need consistent *lab hazard information for:*
 - Fire Department & Police Department
 - Students & Staff
 - Police Department
- 9. Create consistent signage for emergencies
- 8. Meet required regulations
 - Inspections for EPA, OSHA, SCDHEC, CDC regs.



Top 10 reasons we developed a database – continued

- 7. Develop specialized training to meet regulations
- 6. Track waste generation
- 5. ISO 14001 – Identify aspects and impacts
 - How many hazardous waste labs
 - How many radioactive labs
 - Permit Issues (generators, boilers, emissions)



Top 10 reasons we developed a database - continued

- 4. Define other health hazards- building info.
 - Asbestos, PCBs, Freon – CFCs
- 3. Combine databases in department
- 2. Develop format for future databases
 - Risk management
 - Fire safety
- 1. Just because!
 - I ARE AN ENGINEER



Overall database structure

- What type of software?
 - MS Excel or MS Access database?
- Who should develop the database?
 - In-house or consultant?
- Security
 - Who gets access to files?



What type of software?

- MS Excel
 - Intuitive & easy to sort data
 - Simple data input on small data matrixes
 - Most all computers have MS Excel loaded
 - *Limited by matrix size*
 - *Hard to protect data*
 - *Many potential data input errors*



What type of software?

- MS Access (Relationship database)
 - Can create custom input forms
 - Minimizes input errors, typos, and typing
 - This keeps people from corrupting the main database
 - Can import data from MS Excel and other programs
 - Can relate different groups of data with primary keys
 - i.e. Lab data, personnel data, building data
 - Can install security software to limit access
 - *Not all computers have MS Access loaded*
 - *Need someone with MS Access experience*



What type of software? Recommendations

- Define a common identifiers (primary keys)
 - i.e. building number, room number
- Create small databases in MS Excel with these primary keys
- Import data into MS Access database
- Debug/check data for accuracy
 - Run queries, reports



Who should develop the database?

- Best if you can use in-house, in-group talent
 - Developing in-house fosters ownership of the program.
 - Minimizes costs for tweaks in the future
- We combined resources to minimize costs
 - We developed MS Excel files & imported into MS Access
 - Debugged to make sure no duplication errors
- CS group created architecture, security & forms



Lessons learned

- Team selection
- Get everyone's input!!!
- Make the data entry task as easy as possible!
- Follow KISS principle!
- Don't collect data if it won't be used!
- Design it to be upgradeable/expandable
- Stay involved in the development



Database Forms

- Inspection process
- Hazardous waste process/generation form
- Lab information forms
 - Inspection checklist
 - Hazard Information Notice
- Personnel information/training
- Building information
 - Generators, fire pumps etc.



Inspection Process

- Inspect all research & hazardous waste labs annually (1 inspection worksheet)
- Update hazard information sheet during visit
- Define corrective actions if any
- Complete actions < 2 weeks
- Inspect fume hoods annually



Hazardous Waste Process

- Lab personnel fill out hazardous waste tag
- Date the tag when we pick up (see example)
- Assign EPA waste code and sort/store per waste stream in HW storage area
- Enter information into database
 - Building, room #, Date in
 - SCDHEC line item
 - Quantity, container size
- Consolidate and ship <90 days (LOG)



Hazardous Waste Generation Form

- Enter information into database
 - Manifest number
 - Ship date
- Track waste costs, generation rate per:
 - Department, Room number
 - Researcher



Hazardous Waste Tag

- Researcher's name
- Phone
- Room and building #
- Chemical identity
- Quantity
- Container type & size
- Accumulation start date
- EPA waste code
- Unique tag#

HAZARDOUS WASTE		
Federal and South Carolina law prohibits improper storage or disposal.		
IF FOUND, CONTACT HAZARDOUS WASTE MANAGER AT 777-5269, USC POLICE AT 777-9111 OR THE S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL.		
Principal Investigator's Name (Print)		
JIM SMITH		
Phone No.	Room No. & Building	
78206	FSC 105	
Chemical Identity (Name Only)		
XYLENE		
Quantity		
1		
Container Type & Size		
10 L CARTRIDGE		
Accumulation Start Date		
0001 1203		
EPA Code	HS Code	State
Manifest #	Ship Date	Sign
04526		



Hazardous Waste Generation Form

Hazardous Waste Inventory						
Ticket No	Date Received	Chemicals	Quantity	Container	Date Shipped	Manifest Number
3909	4/3/2004	Organic Solvents	1	55 Gallon Drum	6/16/2004	SC 001234
DHEC Code						
Comment						
4526	5/25/2004	Organic Solvents	1	10 Liter Carboy	6/16/2004	SC 001234
DHEC Code						
Comment						



Manifest Update Form

Health and Safety - Manifest Update					
Enter Beginning Receive Date	<input type="text" value="4/1/2004"/>				
Enter Ending Receive Date	<input type="text" value="6/15/2004"/>				
Enter the Manifest Number	<input type="text" value="SC001234"/>	and Ship Date	<input type="text" value="6/16/2004"/>		
Ticket ID Number	Date Received	Date Removed	Manifest	DEHC Waste Code	
3909	4/3/2004	6/16/2004	SC001234	019 - D001 Ignitable waste	
4526	5/25/2004	6/16/2004	SC001234	019 - D001 Ignitable waste	
4001	6/1/2004	6/16/2004	SC001234	019 - D001 Ignitable waste	
Refresh Data	Update Manifest				



Lab Hazard Information

- Five main types of information for each lab
 - Lab hazard information
 - Personnel information
 - Hazardous waste generation
 - Fume hood data
 - Comments



Hazard Information Notice

Emergency Numbers USC Police 7-9111 USC Radiation Safety 7-5269 Work Control 7-4217 Scott Goode 777-0391 Chris Dockery 777-4664 Richard Hoskins 777-9006	Fla Hazards Flammable Liquids in Excess of 1 Gal: Xylene Flammable gases: Acetylene Strong oxidizing reagents: Chlorine Explosives: none Pyrophoric metals: none
Radiation Hazards Microwave Radiation, none Laser Radiation: Class IV RF Radiation 27 MHz	Biological Hazards None
Utilities Electrical power: Outside Door Elec hazards: Several high voltage sources Gas/water shutoff: Inside utility chase Eyewash/safety shower: Inside door	Other Health Hazards
Safety Officer Chris Dockery	Other Information



Lab Hazard Information – Top Section

Health and Safety

Record ID (Campus ID, Bldg No, Room no)		Lab Inspection		Lookup Filter	
Campus	Columbia Campus	Date	6/30/2004	Campus	
Building	HAMILTON COLLEGE	Name	Syfert, Tom	Building	
Room/Lab	315 OFFICE			RM/Lab	
HPLC <input checked="" type="checkbox"/> Hazardous Waste <input checked="" type="checkbox"/> Fume Hoods <input checked="" type="checkbox"/> No of Hoods <input type="text" value="4"/>		<input type="button" value="Filter Off"/>			



Lab Hazard Information – Hazardous Data

Name	Type
Perchloric Acid	Explosives
Hydrogen	Flammable Gasses
Acetylene	Flammable Gasses
Xylene	Flammable Liquids
H-3	Main Isotopes
Argon	Non Flammable Gasses
Laser	Radioactive Hazard
Sodium Hypochlorite	Strong Oxidizing Reagents



Personnel Information


Health and Safety Personnel Maintenance

Record ID: <input type="text" value="169"/> First Name: <input type="text" value="Richard"/> Last Name: <input type="text" value="Adams"/> Inspector <input type="checkbox"/> No <input type="checkbox"/> E-mail: <input type="text" value="radams@mail.chem.sc.edu"/> Phone: Office - Extension <input type="text"/> Cell Phone <input type="text"/> Fax <input type="text"/> Home - Extension <input type="text"/> Pager <input type="text"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Record Selection By</th> </tr> </thead> <tbody> <tr> <td style="width: 50%;">Record ID</td> <td><input type="text"/></td> </tr> <tr> <td>Last Name</td> <td><input type="text"/></td> </tr> <tr> <td>First Name</td> <td><input type="text"/></td> </tr> </tbody> </table>	Record Selection By		Record ID	<input type="text"/>	Last Name	<input type="text"/>	First Name	<input type="text"/>
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Record ID	<input type="text"/>								
Last Name	<input type="text"/>								
First Name	<input type="text"/>								

Safety and Health Training

Hazardous Waste	Lab Safety	Department of Transportation	Radiation Safety	Laser Safety	Respiratory Protection	X-Ray Protection
<input checked="" type="checkbox"/> 12/31/2003	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 12/31/2003	<input checked="" type="checkbox"/> 8/20/2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Save Edit Add Find Undo Del First Prev Next Last 1 of 1




Path Forward

- Import Auto-Cad view system for rooms
- Make Hazardous Information Notice available on-line
- Import building information
- Create insurance information database
- Create fire database for inspections
- Expand training database



Other Benefits of Database

- Ensure all labs/workspaces are identified
- All labs with hazardous waste have documented annual training
- Track training/inspections
- Can develop specific training
 - (hydrofluoric acid, HPLC, etc.)
- Contact personnel in case of emergency (fire, power outage)
- Target labs for safety updates



Does it make sense for your group?

- How big is your facility?
- How many \$\$\$ can you spend?
- How computer literate are your staff?
- Start with MS Excel & then import
- Excel may be good enough
- Is it justifiable? **YES!**
- Other QUESTIONS??



Have a great day!!!!



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