Discussion

- (Dan) Pfizer/Learn Sponsored Program
- (Dan) Opportunities for Consortium Benefits (Support, Information, Education, Buying Power, Milk run, etc.)
- (Dan) Certificate for Milk Run
- (Deb) Schools must develop their own program. This is just the start of such a process. Also, as you are aware regs change so this is an ongoing process.

Schools face unique challenges not found in professional situations.

- Money
- Liability
- Greatly varying levels of knowledge/awareness
- Attitudes/focus
- Need/Desire to do more with less

Discussion

Objectives:

1) Foster a common understanding of:
    a) what is chemical management
    b) who is involved
    c) why is it important
    d) concept of “full life cycle” of a chemical
2) Provide tools to accomplish the program goal
    a) general knowledge
    b) packet materials
    c) products of group activity sessions
    d) coupon – milk run
3) Build support networks (Know your resources)
    a) LEARN consortium
    b) Pfizer and other corporations
    c) school districts (intra & inter-district)
    d) school itself
    e) peer groups
    f) universities
    g) regulatory agencies


Where
are these
Chemicals
?

Layout

- ***Essential:*** Graphics of various chemical holders or generation points

Discussion

- Office/Admin – copier, printer, mimeograph, carbon copy machine, etc
- Maintenance – Cleaning, Mechanical, Grounds
- Classroom – bio, chem, art, metal shop, wood shop, auto shop, graphics, computer labs, photography, drama, consumer sciences
- Custodial – cleaning products


Who is
Involved
?
Pfizer

Discussion

- These are the more intuitive responses that initially come to mind.
- Are only these people involved? – Ask for thoughts/suggestions and stimulate discussion about who else may be involved.

Layout

Discussion

- What about all these people?

  (All staff = Dept Heads, All teachers, Athletic Director, Coaches, etc)
- With regard to chemical management, often these people currently work independently.

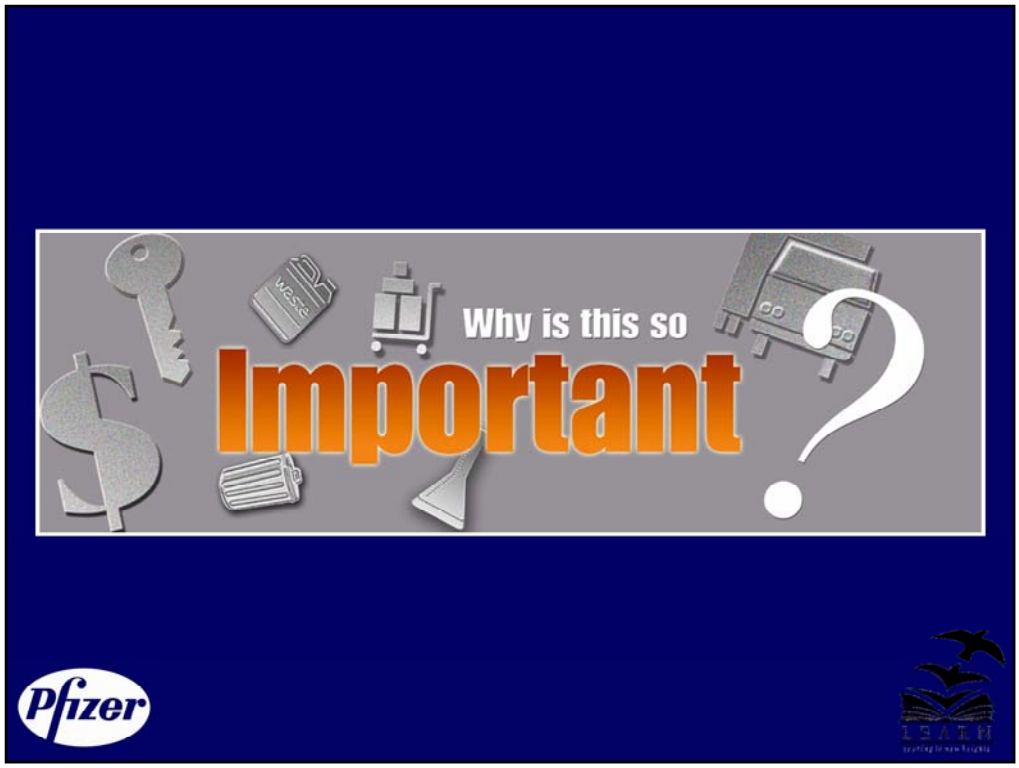
Layout

- ***Non-Essential:*** Better image - Demonstrate all these people in an integrated graphic

Discussion

- Almost more important is how these participants interact/communicate regarding chemical management
- Independent vs. Integrated approach
- All people on previous list need awareness as they have input/affect the chemical management program
- Best to have a subset of this group as a team focused on the establishment and continual evaluation/improvement of the program
  - a) typically consists of science teacher, facility manager, nurse, administrator, etc
  - b) Student involvement where safe and appropriate- opportunity for additional education/training/career path. Also students learn by example.
- Why is a chemical management team better than a CHO?
  - a) handle turnover/consistency
  - b) more input expertise from various representation
  - c) share responsibilities

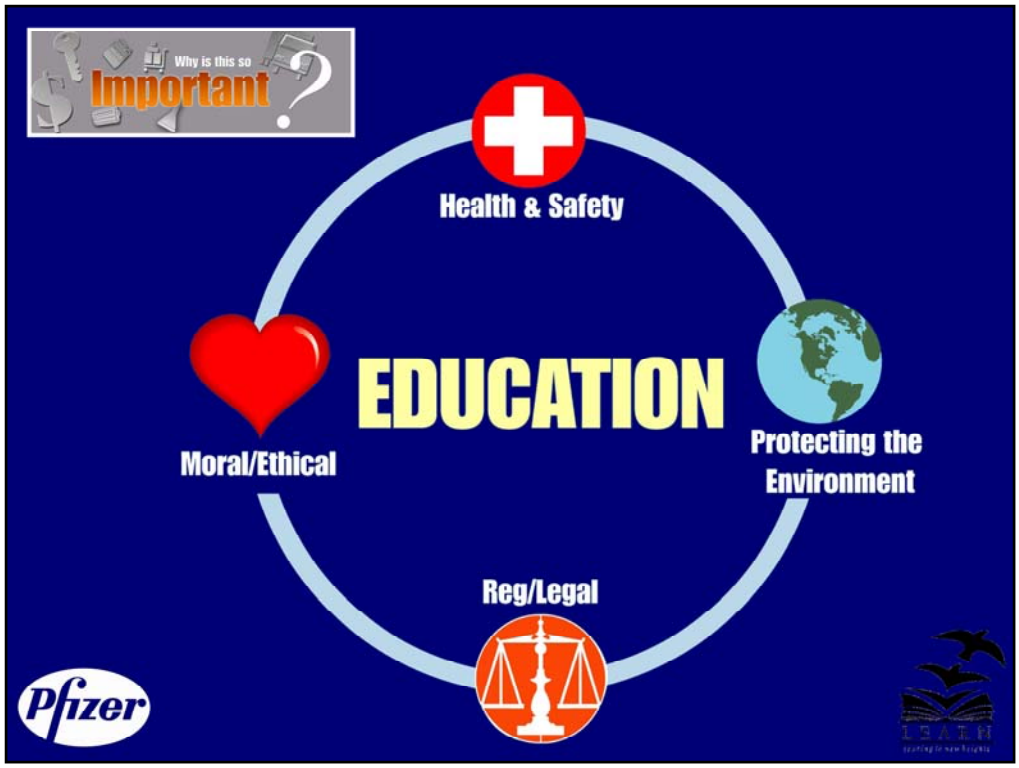
Point of acknowledgment: Are there payment and/or union issues that would surface as a result of teachers/etc taking on additional responsibility without compensation?



Discussion

- Anecdotal demonstrations (articles, etc) about chemical accidents in schools.
- 2-3 stories:

  Each with aspects of the 4 major categories for why (H&S, Protecting the Environment, Regulatory/Legal, Moral/Ethical)



Discussion

- H&S

  a) staff; b) students; c) community; d) control cost

  Control physical hazards, Minimize chemical exposures

- Protecting the Environment

  a) pollution prevention; b) raising environmental awareness; c) control cost; d) minimize releases to the environment

- Moral/Ethical

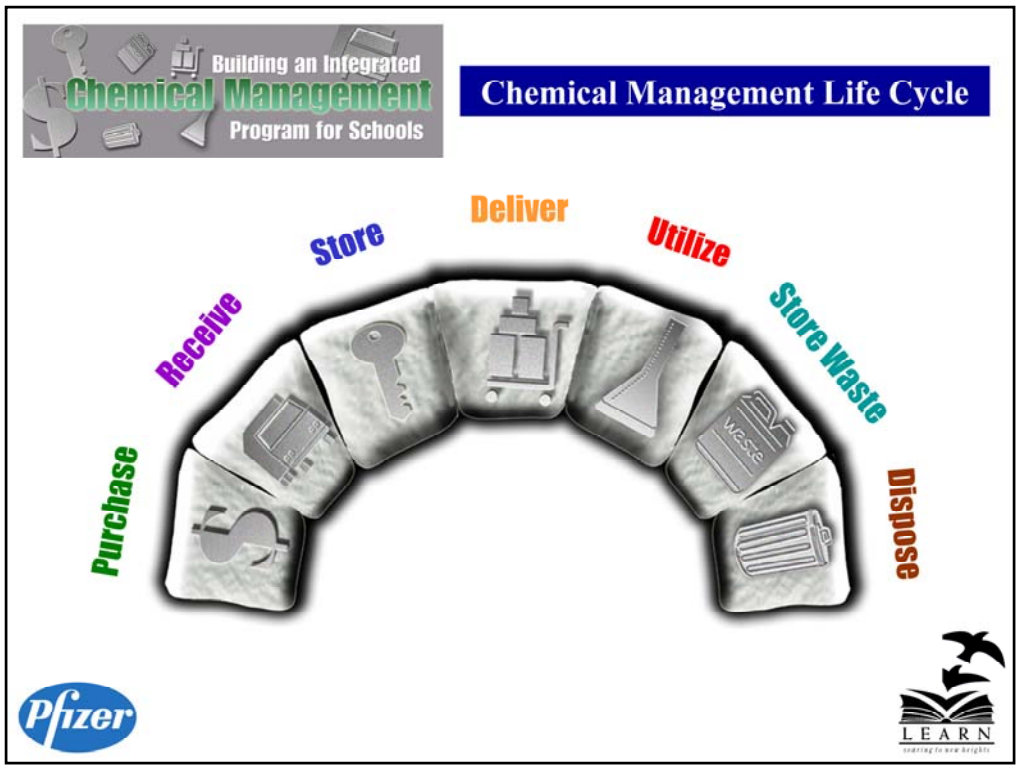
  a) "good citizen"; b) setting a good example; c) ensure positive public relations/public perception; d) students learn by example

- Regulatory/Legal

  a) compliance; b) inspection/audit; c) training; d) reporting; e) control cost

Important (EPA): hit on financial and liability issues with regard to H&S, Reg/legal, Protect the Env.

- Assume all participants are concerned about the four guiding principles. You have a program now and the only reason you don't have a program that might be safer, or that better protects the environment, or that saves more money is that you are not aware of how to develop/implement a better program. Education = key. Starts today with this program – developing common understandings and thinking about things from a different perspective. Continues outside of this session. Through LEARN and other resources and through your Chem Management Teams being proactive about continuing education. So lets start to think about things from a different perspective.



Layout

- ***Non-Essential***: Better Overall Life Cycle stone arch

Discussion

- This is what must be considered for true integrated chemical management
- Describe life cycle processes. Discuss what we mean by each phase.

  Use example – a bottle of HCl through the phases
- Recognize that the process doesn't necessarily start at the Select/Purchase phase. Schools have materials now in varying phases (have existing storage inventory: custodial, maintenance and classroom). For new materials, the life cycle starts at purchase.

- The discussion to follow will pertain to phase-by-phase recommendations for improvements in keeping with the 4 guiding principles. However, it is critically important to look outside of any one phase and any one responsibility.
- Must strive for continuous improvements by providing feedback and input to other areas of chemical management.
- Communication!!! (Integrated life cycle perspective)

Layout

Discussion

- The goals of purchasing in an integrated chemical management program are to proactively **reduce risks**, **environmental impacts** and **costs** associated with chemicals in the school.
- Select/Purchase is a critical phase because of the potential impacts down the line. The generation of waste and its associated management burdens can be lessened with careful selection of chemicals.


Building an Integrated
Chemical Management
Program for Schools
Purchase
How do we achieve these goals ?
Pfizer
LEARN

Discussion

- The purchasing goals are achieved through effective purchasing controls that:
  - a) Consider full life cycle impacts and costs
  - b) Strive to:
    - ID Alternatives
    - Reduce Quantities
    - Eliminate Altogether
- Risks and Environmental impacts can be lessened by examining the "big picture" and choosing less toxic or otherwise hazardous materials, using smaller quantities (microscale experiments where appropriate), or if possible eliminating the chemical entirely.
- Use of MSDS as a resource
- Goals also apply to custodial, maintenance, office/admin, etc

Layout

- 3 ovals that show overlap of requestor/purchaser responsibility (2 small inner) and chemical management team support (1 large outer)

Discussion

- Requestor/Purchaser may be same person, but that is okay. The graphic depicts the overlap/communication between requestor/purchaser responsibility and indicates the support to the process lended by the Chem Mngmt Team.
- <u>What roles & responsibilities assure effective purchasing controls?</u>

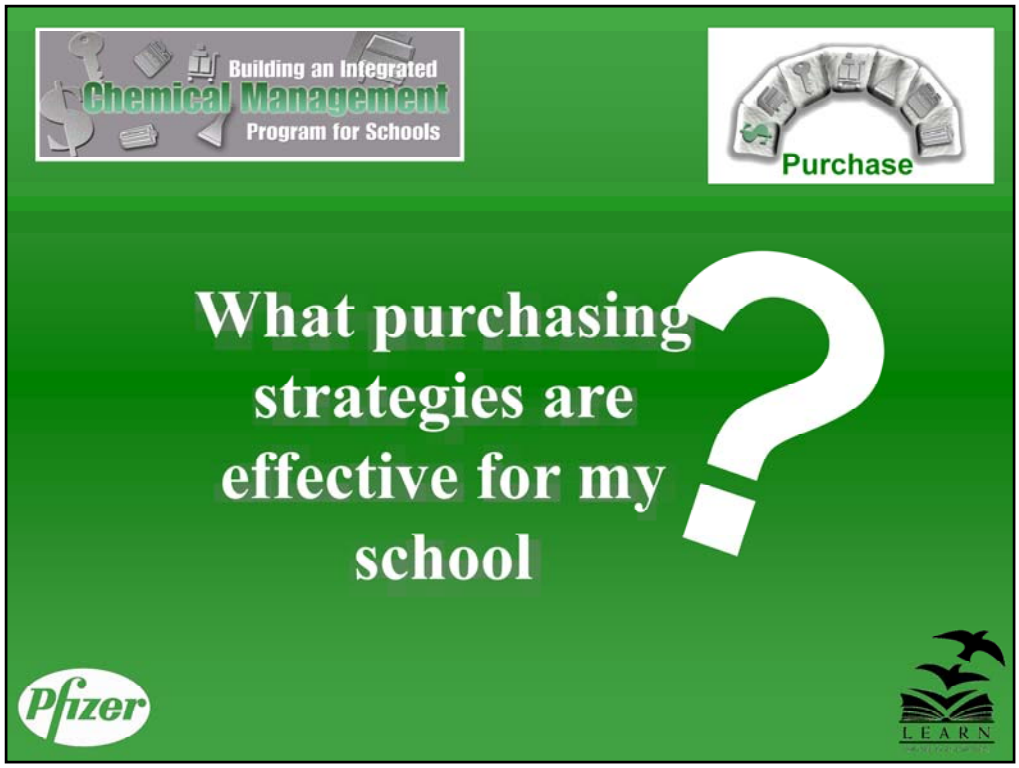
  - The requestor must, to the extent possible, detail the above 3 items so that the purchaser can perform his/her responsibilities. This process also begins to educate the requestors.

  - The purchaser that would perform these functions would likely be a member of the Chem Mngmt Team assisting the purchasing agent. The end goal is that through researching risks, costs, impacts and other requirements an informed decision is made, selecting the best overall alternative.

  *Total Costs means purchase, store, use, dispose, ppe, liabilities, insurance premiums, clean-ups, and increased admin and reg. burden.

  *Refer to packet for examples of "No Purchase" lists

  *Also consider "Red Flag" list. If your order it, you must take additional measures/precautions.


Building an Integrated
Chemical Management
Program for Schools
Purchase
What purchasing strategies are effective for my school
Pfizer
LEARN

Discussion

- What purchasing strategies are effective for my school?

  a) Don't buy in bulk - Chemicals are not office supplies; more you have the greater the liability and risk threat to environment. This also reduces wasted chemicals.

  b) Just-in-Time Purchasing – decrease risks by having the chemical onsite less time.

  c) Coordinate purchasing among departments and/or through consortium for added purchasing power. Also important to coordinate within your own department.

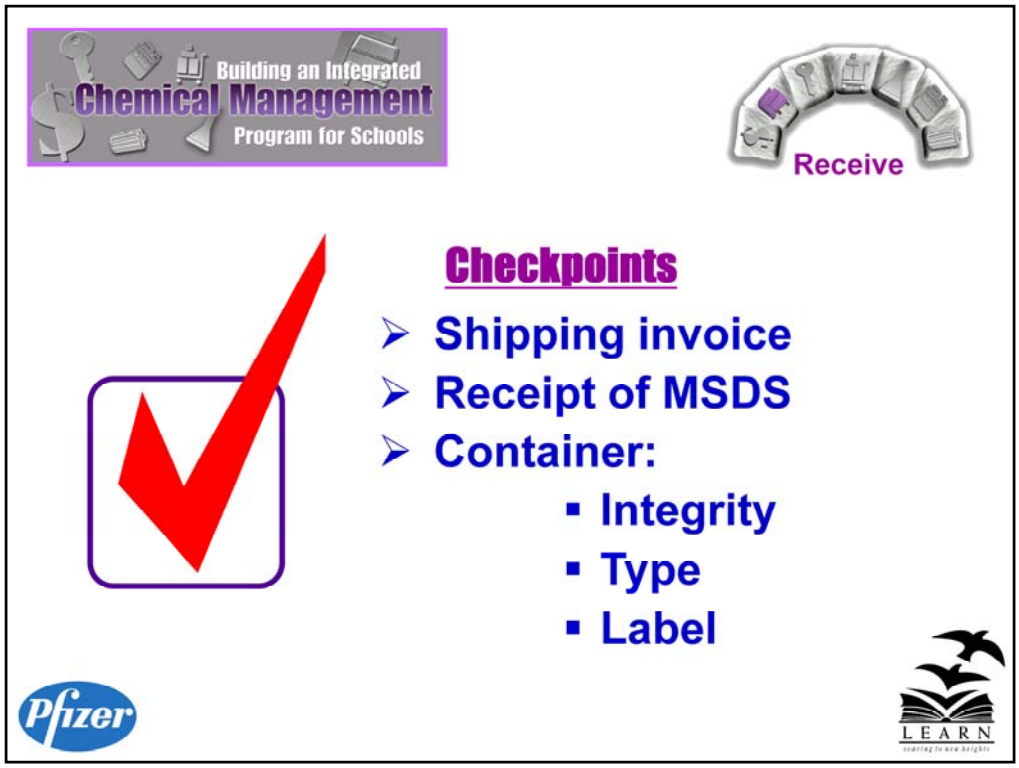
  Say no to donations of chemicals!

Interaction regarding concerns over these strategies (need to change/combat procurement conceptions)

- Use it or lose it budget concepts

- Some might only have one opportunity/year to order

Possibly set-up slush fund to use throughout the year



Discussion

- Life cycle impacts of improper receiving (opportunity to refuse before problems are inherited)

  a) no receipt list should match no purchase list

  b) receiver must have proper training, understand handling guidelines/ppe and have proper place to store

  c) problems identified – feedback to purchasing

  d) communication – timing of receipt, notifications, summer plan

- Discuss potential differences of central storage area
- HazCom standards (inspection for labels, confirm MSDS)
- What to look for on each of above checks

  a) Shipping Invoice - Is it what you ordered? Quantity?

  b) Container Integrity - leaking? Bulging? Dented? - refuse

  c) Container Type - plastic instead of glass when possible, acids in PVC coated bottles

Layout

- ***Needed/Essential***: Blow up picture of a proper chemical label with callout boxes

Discussion

- The correct label includes:

  Name, grade, purity, concentration, shelf life, date purchased, first-aid, lot number, compatible storage info, what safety equip should be avail, disposal method, solubility, chemical abstracts number

Discussion

1) Space – square footage (enough space), walls, floors, shelves, etc

2) Temperature Extremes - Protection for extreme heat and cold

3) Spill Preparedness - containment, response equipment, proper extinguishers, code compliance

4) Secured Access – authorized personnel only, proper signage posted

5) Housekeeping – critical to have a neat storage area

Layout

- ***Needed/Non-Essential***: Icons depicting what they may have in their inventory (labs + think outside of labs)

Discussion

Steps toward a more manageable inventory (Stress importance of qualified person performing these tasks. Safety first. Contractors available for approx. $200 to perform pre-screen)

- Perform a comprehensive, detailed inventory
- Decide on what is needed for 2 years (<1 year for red flag list)
- Remove/Cleanout what is not needed and:
  - chemicals past shelf life
  - containers in poor condition (leaking, corroded, dented, etc)
  - GET HELP, SAFETY FIRST, NO STUDENTS, know emergency #'s and notify fire dep't before clean-out

(DEP – 8 CT schools, costs between $3000 – 15,000 ea for inventory + disposal)

- Organize remaining chemicals by compatibility (refer to compatibility charts in packet handout) No Alphabetical.

Discussion

Why should a school perform a chemical inventory?

- Make better use of storage space
- Comply with reporting and storage requirements
- Weed out dangerous and un-needed chemicals
- Ensure proper compatibility chemical-to-chemical and with shelving, secondary containment
- ID problem chemicals to be placed onto No Purchase List
- Predict disposal costs
- Spill preparedness – you know what you have
- Communication – call fire department, spill response teams ahead of time. Critical to foster relationships, help them to be prepared.

Layout

- ***Needed/Non-Essential***: 3-5 photos of proper chemical storage areas (neat room, flammable/acid cabinets, secondary containment bins, etc)

Discussion

- Store compatible chemicals together (refer to packet)
- Acids in a dedicated storage cabinet
- Flammables in a dedicated storage cabinet
- Keep only what you need
- Maintain updated inventory
- Secondary containment for certain chemicals (give examples)
- Ensure proper training and PPE for those involved in managing storage inventories

Layout

- ***Needed/Non-Essential***: Photo's of incidents as described below (leaking containers, labels missing, etc)

Discussion

- Inspect regularly (weekly, monthly)
- Look for:

  a) bulging, leaking, indented, etc containers

  b) expired chem's

  c) chemicals that become unstable (peroxide formers: ethers, furans, dioxane; picric; metals: sodium, potassium – contaminated = shock sensitive

  d) labels on all containers

  e) housekeeping

Layout

- ***Needed/Non-Essential***: Photos of delivery situations (person carrying chemical box, truck, bottles/boxes on shelves)

Discussion

- This is halfway point in life-cycle. Thus far we have discussed individual phases and suggestions. Bring people out of their wedge or phase and back to idea of input/feedback.
- Checkpoint – communication with all parties

  Where is it coming from?

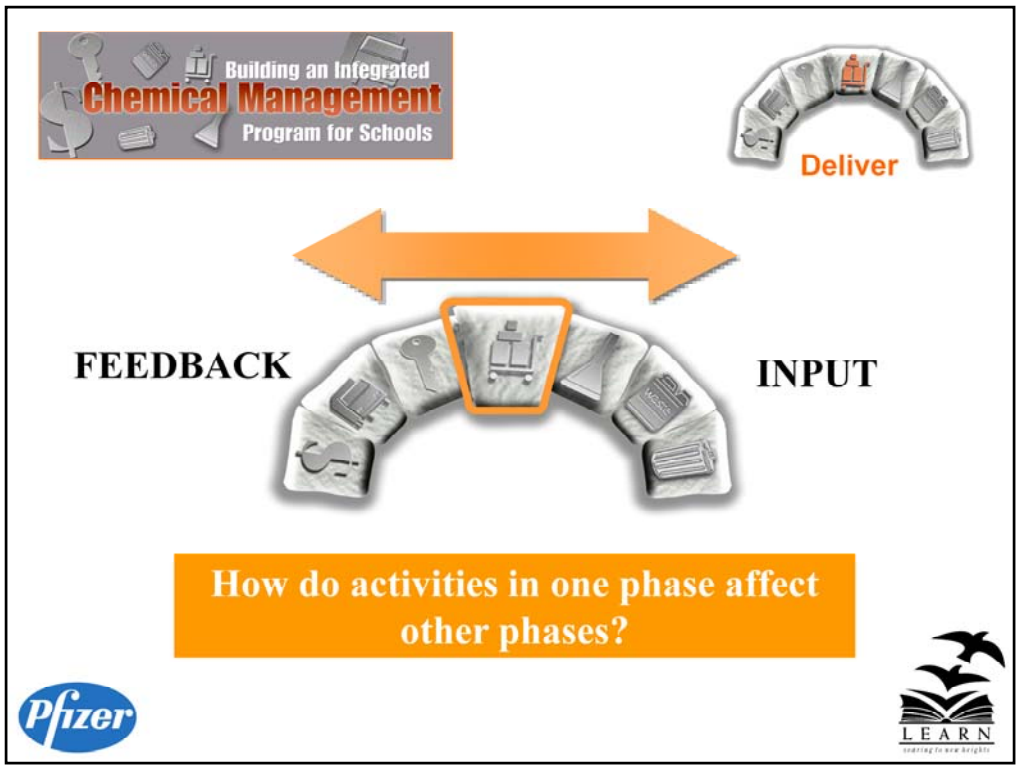
  Where is it going?

  Who will deliver it? Training required? PPE?

  How will it be delivered? Road? DOT – packaging, labeling, BOL, placards?

  Are there adequate storage facilities to accommodate it prior to use?

  Who will receive it?



Layout

- Life cycle arch blow-up with deliver enlarged and highlighted with arrows to the left and right indicating thinking outside the individual phase or role to the integrated full life cycle.
- ***Needed/Essential***: Arrows pointing left and right at top of arch

Discussion

- If we are thinking about this as an integrated system, then answering previous questions informs other areas of the life cycle

  1) Should we be ordering this again?

  2) Was it initially received properly?

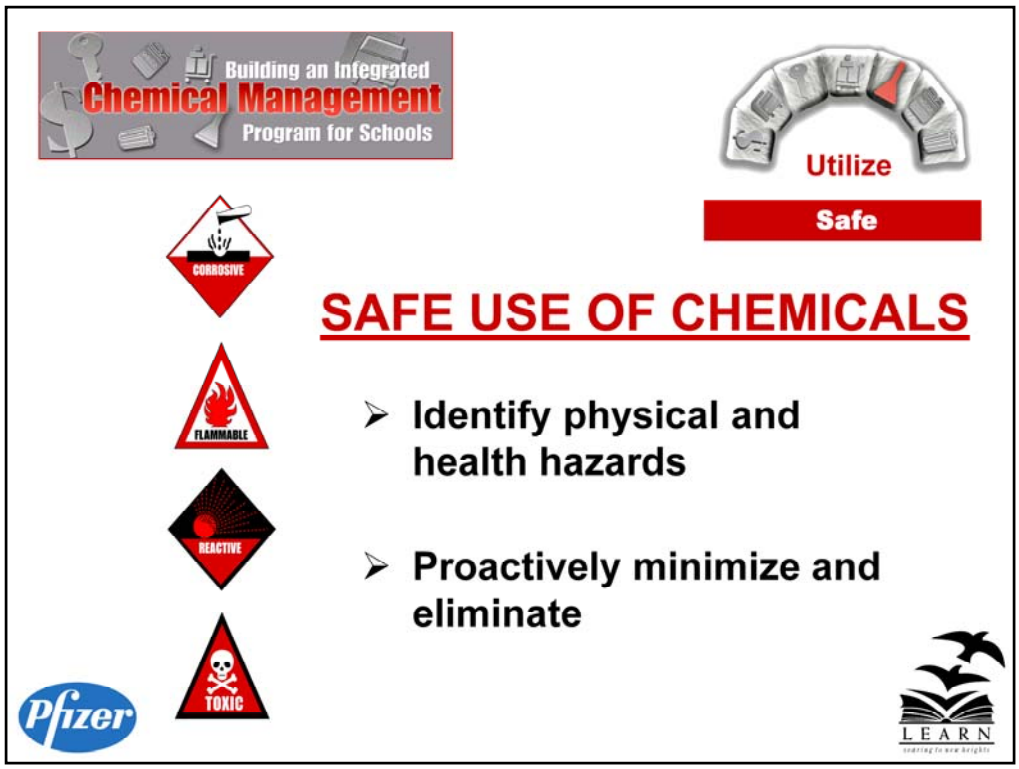
  3) Did anything go wrong during initial storage? (is chemical ruined)

  4) What are the waste implications?

  5) Have they been budgeted for?

Discussion

- Discussion here revolves around safe and responsible use of chemicals.
- Discussion of hazards and impacts takes place here, but applicable to all phases of life cycle.



Discussion

- In order to safely use chemicals we must first ID both physical and health hazards and then proactively mitigate them. In order to accomplish this, we must first understand what the hazards are. (Through MSDS)
- <u>What are the hazards?</u>

  1) Health (Tox 101) – refer to packet

  - Types of exposure (acute, chronic)
  - Effects of exposure (local/systemic, immediate/delayed, temporary/permanent)
  - Routes of entry
  - Everyone affected differently (age, weight, physical condition, predisposed hypersensitivity, etc)
  - Discussion of different chem hazards (lacrimators, irritants, asphyxiants, carcinogens, sensitizers)
  - Discussion of less obvious potential exposures (toners, art ceramics, dust, etc)
  - Symptoms of exposure (nausea, coughing, skin irritation, vision, sudden fatigue, disorientation)

  2) Physical (fire, explosion, pressure release, etc)

Discussion

- Administrative Controls

  a) Don't order it or use it in the first place

  b) Preparedness – CMP; written spill plan (all hours, emergency #'s, when to evac, roles & resp.); safety showers, eyewashes, spill response equipment

  c) Prevention – design safer experiments, use containers that minimize spills, minimize quantities and time outside of storage room, spill pads & trays, elim. ignition sources near flammables

  d) Education – learning about the chemicals that different job functions work with and how to protect yourself (right-to-know) - Admin/science teacher/maintenance personnel all different

- Engineering Controls

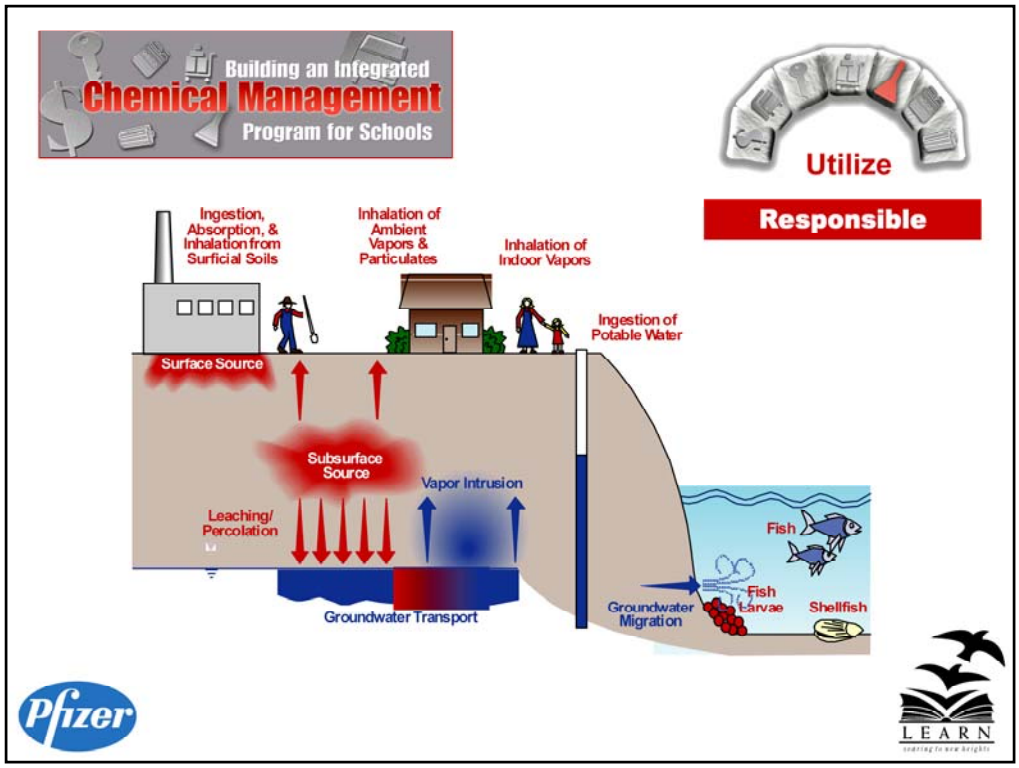
  a) Fume hoods – if release of vapors or dust

  b) work in ventilated areas

- PPE

  a) review MSDS/other to determine appropriate attire

  - safety glasses/goggles, lab coats, glove selection, contact lenses, shoes, pants, etc



Discussion

- Responsible use pertains to being cognizant of how your individual use impacts immediate area, building, neighborhood, community, soil, air, water, etc
- Think about Pollution Prevention, waste minimization from this perspective
- Whenever using hazardous chemicals need to be aware of bigger picture impacts
- Also discuss Indoor air quality – mold, etc

Discussion

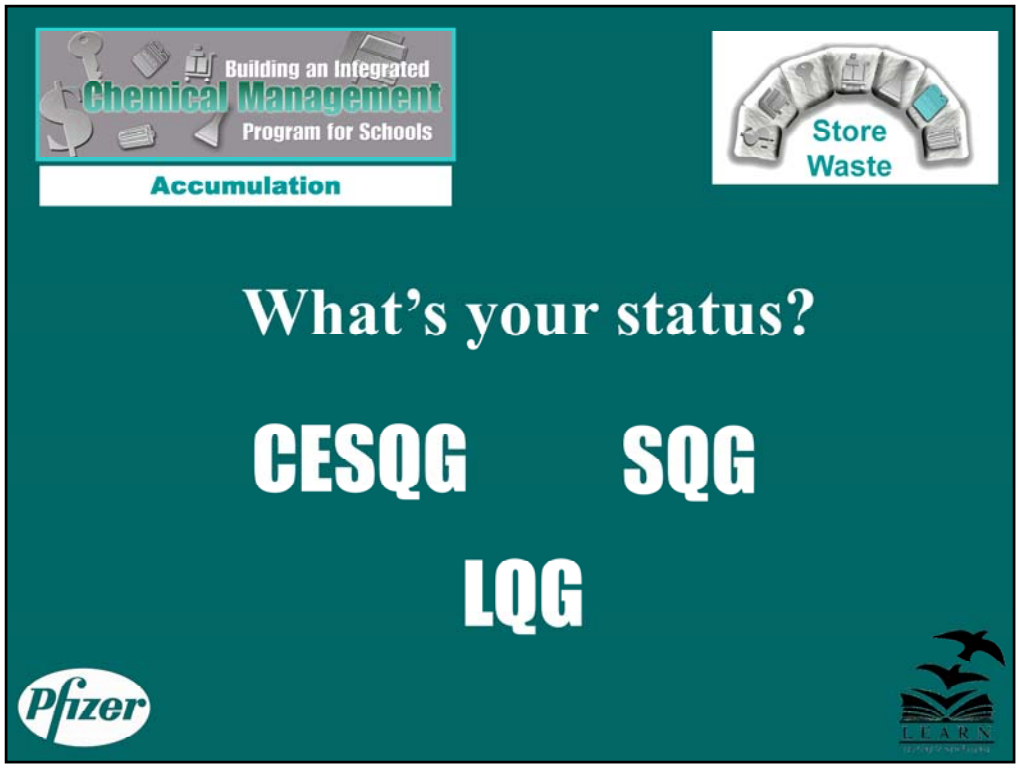
- The first step in storing waste is assessing whether or not it is hazardous. Hazardous waste is either listed or characteristic as described above.
- Discuss examples (aerosol, pesticides, batteries, chemicals, spill cleanup materials, contaminated PPE, thermometers, ballasts, Mercury bulbs, fuels, thermostats
- No Universal Waste in CT
- Principles from Store phase apply here too (not reiterated though)

Discussion

Guidance for accumulation of waste

- Separate haz/non-haz waste
- Label containers immediately upon placing waste inside
- Keep container closed except when adding material
- Don't mix incompatible waste
- Container compatible with contents

- Discuss potential treatment (can't treat waste) – neutralize acids, think strategically about experiments, investigate options



Discussion

- What do you think you are? (Interact)
- Most potentially CESQG, but go back to 4 guiding principles
- If SQG, then accumulation time limits, inspections, containment standards, biennial reports, etc

- Refer to chart in handouts

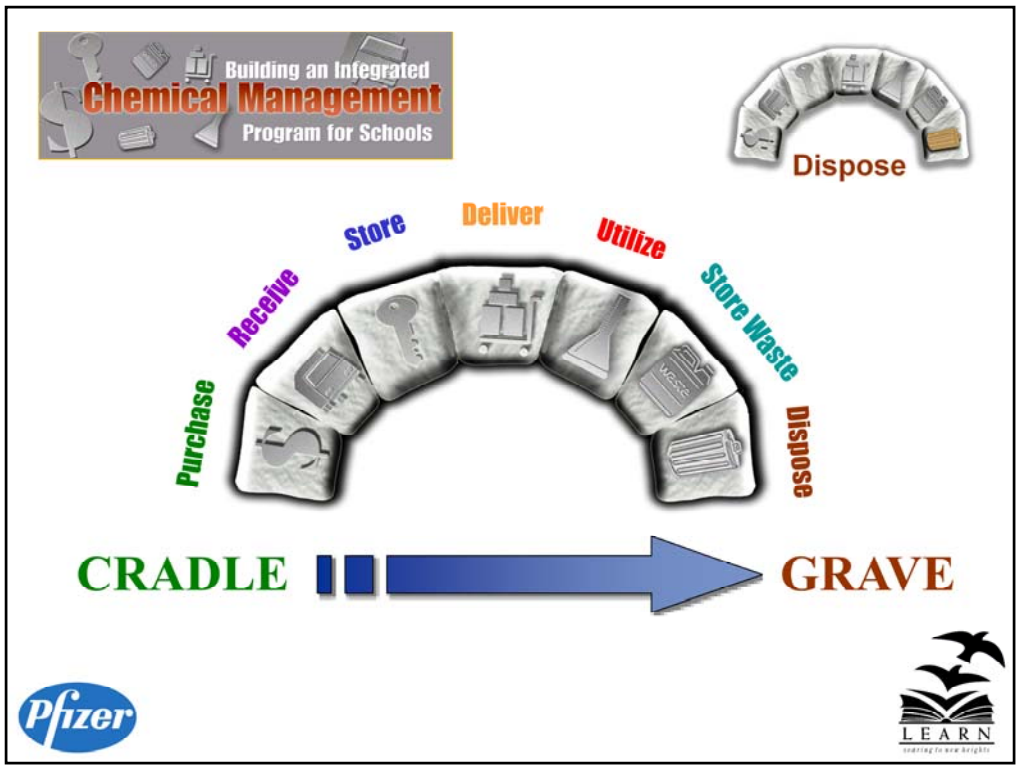
Discussion

- As part of chemical management plan, you should be checking and evaluating these options from least cumbersome to more cumbersome. (4 guiding principles)
- Free opportunities = town sponsored waste collection, etc
- Paying = group consortium, arrange independently - contractor

Discussion

- With regard to compliant and responsible, think about above considerations, plus depending on status (Manifesting; exception reporting; biennial reporting; recordkeeping – notification of regulated waste activity, waste determinations, generation log; EPA ID #).
- Preparing a Waste Min. Plan will ensure that you are identifying alternatives, reducing quantities and eliminating when possible.
- Creating a waste disposal budget requires you to think about total costs – not just purchasing costs; and allocate proper funds.

- *Refer to packet for DEP approved list of waste haulers



Layout

- ***Needed/Essential***: Life cycle graphic with Cradle to Grave portion blown up and highlighted/bolded

Discussion

- Closing thoughts for both Dispose and Life Cycle is that chemical management is a "Cradle to Grave responsibility." Begins with initial request or desire to bring a chemical into a facility and doesn't end until after final disposal.

- Begin discussion of Integrated Chemical Management Plan (CMP)
- Integrated CMP as bridge metaphor to "take you from where you are to where you could be." CMP bridges individual chem needs to responsible chemical mngmt that satisfies the 4 guiding principles. CMP also bridges the gap between the independent versus integrated approach to chem mngmt.
- Chemical Mngmt Team:
  - From some of the disciplines (wedges)
  - Need to reach out for input
  - How do we do it?

Discussion

- (transition) Spent quite a bit of time today discussing bigger picture philosophy of an integrated system program approach
- From a tangible perspective, let's discuss how you formally document this program in a Chem Mngmt Plan
- Pass out binders
- Discuss sections
- Must go back to your school and:
  1) Assemble the proper team
  2) Perform necessary research
  3) Populate these sections with the custom information for your facility
  4) Develop an initial plan
  5) Implement Plan
  6) Review/update/ensure continuous improvements

Layout

- ***Needed/Essential***: Watermark bridge metaphor slide

Discussion

- Initiate activities
- Break-up groups (individual schools work together)
- Hand out individual group packets with activities as follows:

1) all groups:

Chem Mngmt Team - Roles/Job Description/Decision making/ Communications. This exercise informs the first step of developing a CMP – Assembling the right team.

2) 1 group per activity:

a) **What is waste?** ID what you consider waste at your facility. When does something go from useful to waste? What are your policies regarding when something goes into waste (ex. Half empty paint cans? Pour chem out of its original container? Shelf life expired?)

b) **Take material through life cycle** – detail request, impacts, costs, pros & cons, risks, requirements, etc (supply reference material)

c) **Photos of chem storage area** w/ embellishment & annotation- ask for problems and/or good practices

d) **5 MSDSs** + cost to buy, cost to dispose & alternate materials list

– list of questions/scenarios, extract info from MSDSs and costs

Discussion

- Feedback Assessment
- Oral feedback session to be facilitated by Mike Rottas.
- Write out on marker boards.