OBG PRESENTS:
Strategies to Address Environmental Issues During Repurposing and Redevelopment
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Housekeeping

Many accidents can be avoided by keeping your office, site, or facility clean.

**WHY DO WE NEED GOOD HOUSEKEEPING?**

- To prevent fires and the spreading of fires
- To save space
- To reduce the spread of contamination
- To save time and money
- To stop tools from being lost or inadvertently broken

**TIPS OF GOOD HOUSEKEEPING:**

- Keep walkways, paths, and roads clear of debris, tools, cords, hoses, and working materials.
- Keep work benches and toolboxes orderly.
- Have a labeled storage bin for oily or solvent soaked rags.
- Store scrap paper, rope, and other materials which can catch fire away from flammables.
- Remove all nails from unused boards or broken pallets and dispose of the broken boards and pallets in the proper location.
PURPOSE
Failure to consider, or plan for environmental and safety issues related to repurposing can trigger a cascade of events that can complicate the process and cost both time and money.
Cost-Effective & Efficient Implementation Requires:

- Identification
- Avoidance
- Control of potential problems
- Careful Assessment of:
  - Environmental conditions
  - Regulatory requirements
- Development of a detailed management plan early in the process
APPROACH
Three Phase Process to Addressing Environmental Issues during Repurposing

Phase 1
Feasibility Study

Phase 2
Facility Environmental Assessment

Phase 3
Planning and Mobilization
Phase 1
Feasibility Study
Phase 1 – Feasibility Study

- Initiate as early as possible in the process
- Start with the End in Mind
- Develop budget(s) & schedule(s)
Early Planning is Critical

Even with uncertainty regarding the ultimate end point, or inevitable changes that will occur during the course of the process, early planning will lead to the development of a realistic timeline and identification of key decision points that will keep the process in control.
The following items need to be identified as soon as possible in the Feasibility Study Phase:

- Environmental liabilities & assets
- Regulatory requirements/permits
- Critical environmental data needed
- Critical safety issues (including hazardous chemicals)
Key Questions to Help Planning Efforts

- Will facility be maintained or sold?
- Will infrastructure be repurposed or demolished?
- Can materials be recycled or sold?
- What will end zoning be?
- What are the known environmental liabilities?
- Is there value in maintaining existing permits or features?
Third-party consultants can help with the planning phases since they bring special expertise and knowledge:

- Identify opportunities for reuse/recycling of material
- Provide market analysis of asset value
- Provide for accurate consideration of internal costs to project
- Identify realistic budgets and timeframes for implementation
Phase 2
Facility Environmental Assessment
Phase 2 – Facility Environmental Assessment

- Characterize site conditions relevant to repurposing/redevelopment
- Designed to match the proposed endpoint
- Designed to address regulatory requirements and support key decision-making.
Data Generation/Investigations

- Should be done with purpose
- Legal counsel may need to be involved
- Development of detailed plans will help stay on schedule
- Plans should be flexible to allow for changes during the investigation
- Data should be reviewed in real-time
Plans should also consider the unknowns:

Plan for the fact that unknowns will be encountered

Providing a process for systematically dealing with such situations can prevent:

- Confusion
- Significant schedule delays
- Unnecessary cost increases
Typical plans developed for large, campus-wide repurposing/redevelopment projects may include:

- Health & Safety
- Facility Assessment
- Hazardous Materials Abatement
- Demolition
- Soil Management
- Waste Management
- Traffic Control
- Site Security
- Regulated Area Closure
Assessment planning can include a variety of items or subjects:

- Equipment containing CFCs (air conditioning units, drinking fountains)
- Oil-filled units containing PCBs
- Universal wastes and electronics
- Lead-based paint and other lead-containing items
- PCB building materials (caulks)
Assessment planning can include a variety of items or subjects.

- Asbestos-containing materials,
- Radioactive devices
- Concrete (floors, walls, trenches, basins, etc.)
- Fluid filled pipes, vessels and tanks
- Hazardous and non-hazardous wastes
Various agencies will likely have jurisdiction, so it is best to begin engaging the regulatory agencies early in the process. Collaboration at an early stage can help to avoid problems later.

A clear and concise understanding of applicable permits and regulatory programs is critical so that a plan for addressing them can be developed and communicated to the agencies.

While high-level involvement is key, it is also important to include the rank and file agency personnel that will implement programs and conduct site inspections/audits to avoid surprises and delays.
Typical environmental permits and regulatory programs that may be applicable:

- Air (Title V or other)
- Storm water discharge
- Waste water discharge
- Ground water withdrawal/use
- Surface water withdrawal
- Cooling water discharge
- RCRA / HSWA
- RCRA hazardous waste generator (large/small quantity)
- Universal waste generator (large/small quantity)
- Oil Spill Prevention Control and Countermeasure (SPCC)
- Asbestos abatement
- Erosion and Sedimentation Control (ESC)
- Surface disposal/landfilling
- Wetlands
Phase 3
Repurposing/Redevelopment Implementation
Phase 3 – Repurposing/Redevelopment Implementation

- Delays cost money
- Work done out of sequence affects subsequent tasks and increases cost
- Flexibility can be accommodated when conditions warrant, but changes may affect schedule and budget

The most important aspect of implementation to control cost and schedule is to stick to the approach and sequencing established during the planning phase.
**On-Site Environmental Management/Oversight**

- Coordinate between construction trades with respect to EHS items/issues
- Oversee contractor handling of, track and document waste removal and disposal
- Maintain documentation of training and certifications
- Inspect waste storage areas and implement corrective actions, as necessary
- Coordinate/communicate with regulatory agencies
- Observe demo activities and respond to identification of previously unknown environmental conditions
- Manage response to unforeseen releases to limit impacts to surrounding environment
- Provide information/documentation for compliance with permits and programs
Case Studies
Case Study #1
Pharmaceutical Manufacturing Facility, Georgia
1,000,000 square foot (ft²) former pharmaceutical manufacturing facility

105 acres within a 1,000-acre tract of property along a major river

Originally constructed and began operation circa 1915

Initial facility assessment and plan development conducted by a third-party environmental consultant

Decommissioning began 2007; abatement and demo initiated by a demo contractor 2010

Due to multiple contract and safety concerns, original demo contract was terminated
New CM At-Risk contract with Eng/Env & CM firm with subcontracted demo and abatement partners July 2012

- Needed to make up lost time & money spent since the original contract was terminated
- Needed to complete the project as quickly and cost-effectively as possible
- Previous assessment activities had been limited in scope
- Detailed plans were developed and comprehensive assessment was performed
Detailed plans developed and submitted to the appropriate regulatory agencies

Health and Safety
Facility Assessment
Facility Abatement
Demolition
Soil Management
Waste Removal
Traffic Control
Notifications and permit applications
Comprehensive Assessment

- 400 samples of concrete floors, walls and trenches for waste characterization.
- Verification of previous asbestos surveys and supplemental asbestos sampling where needed.
- Over 200 hundred additional samples of TSI were collected to supplement existing asbestos survey data.
Abatement and demolition scope also included environmental compliance: asbestos abatement, universal waste abatement, vertical demolition, waste management/removal, horizontal demolition, site restoration and closeout.

Environmental compliance required providing full time environmental oversight; maintaining spill prevention and control; supervising line breaking and cleaning of pipes, equipment and tanks; tracking environmental items of inventory to final disposition; and responding to discovery of unknown environmental issues throughout the vertical and horizontal demolition progress.
Completed 4th quarter 2013

Ahead of schedule

Under the owner’s original budget

Detailed planning provided ultimate success
Case Study #2
Pharmaceutical R&D Facility, New York
Operating pharmaceutical manufacturing campus comprised of two portions: active mfrg and R&D

R&D portion to be demolished in first phase

Asbestos and Lead survey completed; but PCBs not delineated

Concrete foundations removed and stockpiled for disposal

Landfill characterization requirements called for PCB analyses and resulted in exceedance of TSCA haz waste criteria

Resulted in significant cost for disposal of R&D portion stockpiled concrete that was comingled
Second Phase Active Manufacturing Demo

- Different consultant for Hazardous Building Materials Surveys
- Significant planning effort was expended to characterize and delineate hazardous building materials, asbestos, lead, and PCBs
- Delineation completed prior to development of demolition and abatement plans, schedules and cost estimates
TSCA/hazardous materials delineated prior to removal

Allowed for segregation

Minimized abatement and disposal costs

Detailed planning provided ultimate success
Conclusion
Management of environmental considerations inherent to repurposing can be challenging.

Failure to plan can trigger a cascade of events that can complicate the process and cost time and money.

Assessment of conditions and requirements, and development plans that include identifying unknown conditions early in the project can identify, avoid, or control potential problems; resulting in more efficient and cost-effective implementation.
Session Evaluations can be completed:

- On the Safety 2017 App
- Using the link in the email reminder you will receive at the end of each day
Thank You!
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