

Practice: 309 - Agrichemical Handling Facility

Scenario: #1 - Open buidling, locked chemical storage room, concrete slab floor

Scenario Description:

This practice scenario is an open, roofed agrichemical handling facility. The facility contains a locked storage room and area for mixing, loading and storage of chemicals on a concrete floor. This practice addresses water quality degradation and due to mis-handling, storing, and mixing of agrichemicals where nutrients and/or chemicals are running off into surface waters or leaching into ground water.

Associated practices: Heavy Use Area Protection (561), Diversion (362), Access Road (560), Pumping Plant for Water Control (533), Nutrient Management (590), Pest Management (595), Roof Runoff Management (558)

Before Situation:

Agrichemicals are improperly stored on the ground and mixed next to a well, stream, pond, or other water bodies. Operator mixes the agrichemicals and fills the sprayer tank next to a hydrant. Spills or overflows of agrichemicals contaminate the soil, runoff to surface waters and leaching to ground water.

After Situation:

An agrichemical handling facility is constructed for handling and storage of agrichemicals. The open, post frame building includes a concrete block walled, locked room for chemical storage and area for mixing, loading and storage of chemicals. The agrichemical handling facility is sized for proper storage, mixing and loading of liquid agrichemicals on a curbed reinforced concrete containment pad with bottom dimensions of 40 ft x 60 ft. The facility contains a 10 ft x 20 ft locked storage room. The concrete is sealed and sloped to a collection sump with required storage volume. This practice will contain agrichemicals and prevent contamination of surface and ground water resources.

Scenario Feature Measure: Total Storage + Containment Area

Scenario Unit: Square Foot

Scenario Typical Size: 2,400

Scenario Cost: \$29,086.60

Scenario Cost/Unit: \$12.12

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|--|-------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic yard | \$1.88 | 45 | \$84.60 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$356.90 | 4 | \$1,427.60 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$112.96 | 45 | \$5,083.20 |
| Labor | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hour | \$18.75 | 16 | \$300.00 |
| Materials | | | | | | |
| Emergency shower and eye wash station | 1499 | Emergency shower and ewe wash station unit. Materials only. | Each | \$586.94 | 1 | \$586.94 |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place | Cubic yard | \$23.07 | 30 | \$692.10 |
| Door, Steel | 2391 | Heavy duty fire rated steel door, full panel flush, 18 gauge, 4' x 7'. Materials only. | Each | \$1,035.24 | 1 | \$1,035.24 |
| Roof, Post Frame Building, 30' to 60' wide | 1676 | Post Frame Building, no sides, - 30' to 60' width. Building sites with expected snow loads up to 30 lbs per square foot and wind exposure in semi protected areas (wooded or terrain with numerous closely spaced obstructions). Includes materials, shipping, equipment, and installation. Does not include foundation preparation. | Square Foot | \$5.40 | 2400 | \$12,960.00 |

Materials

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|---|------|--|-------------|----------|------|------------|
| Painting, concrete surface, impermeable | 1497 | Painting of concrete surfaces with an impermeable coating. Includes materials and application. | Square Foot | \$0.93 | 2400 | \$2,232.00 |
| Catch Basin, concrete, 2'x2'x6' | 1257 | Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor. | Each | \$568.14 | 1 | \$568.14 |
| Wall, Exterior, Concrete Block | 2388 | Concrete block walls filled with vermiculite for fire proof chemical storage room. Material and installation included. | Square Foot | \$7.85 | 452 | \$3,548.20 |

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|----------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$249.80 | 2 | \$499.60 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$68.98 | 1 | \$68.98 |

Practice: 309 - Agrichemical Handling Facility

Scenario: #2 - Enclosed buidling, locked chemical storage room, concrete slab floor

Scenario Description:

This practice scenario is a roofed and enclosed agrichemical handling facility. The facility contains a locked storage room and area for mixing, loading and storage of chemicals on a concrete floor. This practice addresses water quality degradation and due to mis-handling, storing, and mixing of agrichemicals where nutrients and/or chemicals are running off into surface waters or leaching into ground water.

Associated practices: Heavy Use Area Protection (561), Diversion (362), Access Road (560), Pumping Plant for Water Control (533), Nutrient Management (590), Pest Management (595), Roof Runoff Management (558)

Before Situation:

Agrichemicals are improperly stored on the ground and mixed next to a well, stream, pond, or other water bodies. Operator mixes the agrichemicals and fills the sprayer tank next to a hydrant. Spills or overflows of agrichemicals contaminate the soil, runoff to surface waters and leaching to ground water.

After Situation:

An agrichemical handling facility is constructed for storage of agrichemicals. The building includes a locked room for chemical storage and area for mixing, loading and storage of chemicals. The agrichemical handling facility is sized for proper storage, mixing and loading of liquid agrichemicals on a curbed reinforced concrete containment pad with bottom dimensions of 25 ft x 25 ft. The facility contains a 15 ft x 9 ft locked storage room. A flexible membrane liner is installed beneath the concrete slab. The concrete is sealed and sloped to a collection sump with required storage volume. This practice will contain agrichemicals and prevent contamination of surface and ground water resources.

Scenario Feature Measure: Total Storage + Containment Area

Scenario Unit: Square Foot

Scenario Typical Size: 625

Scenario Cost: \$15,802.95

Scenario Cost/Unit: \$25.28

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|---|-------------|-----------------|----------|------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$356.90 | 1 | \$356.90 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$112.96 | 12 | \$1,355.52 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic yard | \$1.88 | 23 | \$43.24 |
| Labor | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hour | \$18.75 | 24 | \$450.00 |
| Materials | | | | | | |
| Post Frame Building, enclosed 4 sides | 1046 | Enclosed post frame building, four walls. Building sites with expected snow loads up to 30 lbs per square foot and wind exposure in semi protected areas (wooded or terrain with numerous closely spaced obstructions). Includes materials, shipping, and labor only. | Square Foot | \$9.47 | 625 | \$5,918.75 |
| Catch Basin, concrete, 2'x2'x6' | 1257 | Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor. | Each | \$568.14 | 1 | \$568.14 |
| Synthetic Liner, 40 mil | 1387 | Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only. | Square Yard | \$5.90 | 69 | \$407.10 |
| Painting, concrete surface, impermeable | 1497 | Painting of concrete surfaces with an impermeable coating. Includes materials and application. | Square Foot | \$0.93 | 625 | \$581.25 |

Materials

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|---|------|---|-------------|------------|-----|------------|
| Emergency shower and eye wash station | 1499 | Emergency shower and eye wash station unit. Materials only. | Each | \$586.94 | 1 | \$586.94 |
| Tank, rinsate or chemical storage, > 100 to 300 gal | 2050 | Poly tank reservoir for storing rinsate or other liquid agrichemicals. Greater than 100 to 300 gallon capacity. Materials only. | Gallon | \$1.42 | 600 | \$852.00 |
| Wall, Exterior, Concrete Block | 2388 | Concrete block walls filled with vermiculite for fire proof chemical storage room. Material and installation included. | Square Foot | \$7.85 | 357 | \$2,802.45 |
| Door, Steel | 2391 | Heavy duty fire rated steel door, full panel flush, 18 gauge, 4' x 7'. Materials only. | Each | \$1,035.24 | 1 | \$1,035.24 |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place | Cubic yard | \$23.07 | 12 | \$276.84 |

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|----------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$249.80 | 2 | \$499.60 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$68.98 | 1 | \$68.98 |