DURACELL INC.
NORTH TARRYTOWN, NEW YORK

CHARACTERISTICS OF DEMOLITION DEBRIS

PROJECT #425-1
JULY 1987

EDER ASSOCIATES
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EXECUTIVE SUMMARY

Duracell Inc. (and its predecessor, P.R. Mallory and Co.) manufactured batteries at its Elm Street plant in North Tarrytown, New York since 1945. Duracell Inc. wishes to demolish the building and sell the site. An evaluation of the building indicated that residues containing lead and mercury from the manufacturing operations had accumulated on interior surfaces, in air ducts and in air pollution control equipment. Duracell proposed a remedial program to clean and decontaminate the building. Residual surface metals remaining after cleaning would be insignificant when mixed with an estimated 6,000 tons of demolition debris and the demolition debris would be acceptable in a C & D landfill.

I. SUMMARY

Duracell Inc. had submitted an "Engineering Report Evaluating On-Site Residues" at their former North Tarrytown, New York battery manufacturing plant to the New York State Department of Environmental Conservation (DEC) on October, 28 1985. The report, prepared by Eder Associates Consulting Engineers, P.C. (EA), presented the results of their investigation of site conditions with respect to the potential presence and characteristics of residues resulting from prior manufacturing operations. One of the conclusions of the report was that residues containing metals have accumulated in ductwork systems, air pollution control equipment, floor trenches and interior manholes, and remain on the interior surfaces of the building. Duracell proposed a remediation program which includes cleaning and demolition of the building and disposal of the debris to a landfill approved for construction and demolition (C & D) debris.

This report summarizes existing conditions within the plant, describes the proposed method of cleaning the building and projects future conditions resulting from the building cleaning program designed to produce a level of cleanliness so that demolition debris is acceptable for disposal to a C & D landfill. Duracell proposes to clean the building by removing or cleaning equipment with residues containing the highest amounts of metals. Ductwork and attic insulation will be removed. Air pollution control equipment, floor trenches, interior manholes and roof areas will be cleaned. To ensure a minimum quantity of residual metals, floors and selected room surfaces will also be cleaned. After cleaning, sampling and analysis will be performed in accordance with a Quality Assurance/Quality Control (QA/QC) plan to document the level of cleanliness achieved. Residual surface metals remaining after cleaning should be about 0.5 pounds of lead and 0.1 pounds of mercury. This is insignificant when mixed with an estimated 6,000 tons of demolition debris.

The plant building located at 60 Elm Street, North Tarrytown, New York was constructed in phases since 1910. The property with about 30,000 square feet of building floor space was purchased by P.R. Mallory and Company, Inc., the predecessor company of Duracell, in 1945. An additional 30,000 square feet of building floor space was constructed by 1957.

A variety of batteries was manufactured in the building since 1945. Several metals, principally lead, mercury and zinc were used in the manufacturing operations. Organic compounds, such as propanol, acetonitrile, mineral spirits and freon were used in manufacturing operations since the mid 1970's. These compounds have a high vapor pressure and spills would evaporate if they were not removed. The limited information available concerning prior ownership of the building suggests that past uses did not involve the significant use of materials which are presently regulated when disposed.

Eder Associates Consulting Engineers, P.C. (EA) was retained in 1985 to investigate plant conditions with respect to the potential presence and characteristics of residues from prior manufacturing activities which might remain in the plant building. The investigation identified residues containing metals of which lead, mercury and zinc occur in the highest concentrations. The presence of zinc is not considered significant because, being an essential nutrient, it is not considered a health risk and it is not a criteria metal for hazardous waste determination.

Most of the metals remaining in the plant building are considered to be inside air pollution control equipment. Small amounts of metals are contained in solids, liquids and sludges remaining in floor trenches and interior manholes, on the interior surfaces of ductwork, on the roof and in attic insulation. A thin film of residues remains on the surface of the building structure and contains less than one percent of the total quantity of remaining metals. Most of these residues are on the floors of the building.

Duracell proposes to clean the building so that only trace amounts of lead and mercury remain and the debris resulting from the building demolition can be disposed to a C & D landfill. The proposed cleaning program is designed on a cost-benefit basis to remove about 99.8 percent of the lead and in excess of 99.99 percent of the mercury on the surfaces of the building.

II. EXISTING CONDITIONS

Building Description

Duracell Inc. owns a former battery manufacturing plant located at 60 Elm Street, North Tarrytown, New York. The plant building, shown in Drawing No. 1, is one story, except for the northwest portion, which is two stories. The north central portion has an attic space. The only below grade construction is a boiler room at the center of the west wall of the building. The building area is about 50,000 square feet and floor space is about 60,000 square feet (not including the attic).

The building has about 60 different rooms or functional areas in which a variety of manufacturing operations and administrative functions had been performed. For analysis purposes, the building is divided into 15 areas, designated in Drawing No. 1, and listed in Table 1. The areas are defined by use and isolated by enclosure walls and generally served by separate air handling systems. Designated uses are based on the most recent practices. Some areas were used for different purposes in the past. For example Area 6, designated a maintenance shop, was formerly used for manufacturing. Some areas, such as 4 and 5 were constructed in the last 10 years. Area 15, used to store RCRA listed hazardous waste, was constructed in 1979.

The drawing also shows some of the air conditioning and exhaust systems and drains in the building. Ductwork is shown schematically, lengths are approximate and diameter is not to scale. The drawing also shows air pollution control equipment and chemical storage tanks located in the areaway at the southeast corner of the site. Major mechanical equipment remaining in the building includes a freight elevator and truck levelers and weigh scale at the loading dock (not shown).

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE 1

BUILDING ANALYSIS AREAS

Area	Use	Floor Area (square feet)
1	Offices	2500.
2	Offices	2800.
3	Manufacturing	16,000
	Maintenance Shop	
	Shipping	
	Locker and Showers	
4	Manufacturing	750.
5	Manufacturing	620.
6	Maintenance Shop	1360.
7	Manufacturing	1950.
	Laboratory	
8	Manufacturing	3300.
9	Manufacturing	1660.
10	Shipping	14,000.
11	Manufacturing	4700.
12	Office	9280.
	Cafeteria	
	Laboratory	
13	Attic	8000.
14	Boiler Room	980.
15	Hazardous Waste Management Facility	570.
		68,470

The building, constructed in phases between about 1910 and 1979, is concrete slab on grade construction, with brick, cinder block and concrete block exterior walls. The boiler room and the second floor are poured concrete. Roofs, except above Areas 10 and 11, are wood with either shingle or PVC membrane covering. The roof above Area 10 is metal decking and composition roofing with gravel. The roof above Area 11 is wood and composition roofing with gravel. Most interior walls are painted cinder or concrete block and some interior partition walls are dry wall construction.

Parts of the building, shown in Drawing No. 2, have plasterboard ceilings attached to the roof joists providing room heights. On the first floor, the room height is about 14 feet and fiberglass insulation rolls fill the space between the plasterboard and roof. Ceiling tiles are attached to the underside of the ceiling in Area 1 and room 30 of Area 7. The second floor has a plasterboard ceiling attached to stringers from the roof joists providing room heights of about 12 feet. There is no insulation in the 2 to 3 foot space between the plasterboard and sloping roof. Parts of the building, shown in Drawing No. 3, have open grate hung ceilings about ten feet above the floor, with integral fluorescent light fixtures and air diffusers. Exposed ceilings along the west side of the first floor are the underside of the poured concrete second floor and metal roof decking of Area 10.

The ceiling below the attic floor is plasterboard attached to the underside of floor joists. A wood planking walkway attached to the topside of the floor joists provides access along the center of the attic. Loose mineral wool insulation has been blown into the space above the ceiling between the attic floor joists.

Area 11, a temperature and humidity controlled area consisting of room 44 with air locks 44A and 44B, and mechanical equipment room 56, was constructed in the late 1970's within the building shell. There

00-17-1 (5/76)
Formerly GA-4

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

TRANSMITTAL SLIP

TO: Jim Hardy, Reg 3. DSHW

FROM: Femi FALADE, DEE White Plains

DATE: 8/6/87

RE: DURACell WORK PLAN (Attached) for RIFS.

Attached is Reg 3's copy of Duracell's RIFS Work Plan for your review & comments. Please call or write your comments to me so that a joint response can be prepared by me.

Thanks.

FOR ACTION AS INDICATED:

- ☐ Please Handle
- ☐ Prepare Reply
- ☐ Prepare Reply for ______ Signature
- ☐ Information
- ☐ Approval
- ☐ Prepare final/draft in ______ Copies
- ☐ Comments
- ☐ Signature
- ☐ File
- ☐ Return to me
- ☐ ______
- ☐ ______

RECEIVED
AUG 7 1987
NYS DEC
REGION 3

is a crawl space between the roof of the room and building referred to as Area 11c. The hung ceiling above Room 44 forms the supply and return air plenum. Exhaust air, which is returned to room 56 and enters the air handling unit through filters, is conditioned and blown into the supply air plenum. This area is analyzed as follows:

Area 11	room 44 and air locks
Area 11A	room 44 - supply air plenum
Area 11B	room 44 - return air plenum
Area 11C	crawl space

Rooms 46A in Area 7, and rooms 47, 48, 49 and 51 in Area 10, are 8 foot high internal rooms within the building shell. They are wood frame, dry wall with wood roofs. Some offices in Areas 2 and 12 have exposed walls of wood paneling on studs attached to the concrete block walls of the building.

Drawing No. 1 shows 11 air handling (AHUs), designated AHU 1 through 11, which are served by roof mounted air cooled condensers (not shown). Most of the units supply conditioned air through supply air ducts (SAD) and air is returned directly to the units. Some air is returned to AHU 2 through a return air duct (RAD). Small package AHU's remaining in the building are not shown in the Drawing.

Drawing No. 1 also shows 11 exhaust systems designated ED-1 through 8 and three other systems. The system located along the east wall of Area 3 exhausts through baghouse No. 4. The exhaust duct system serving Area 5 exhausts through baghouses located in the areaway. A piped vacuum system, also serving Area 5, exhausts through cyclones located next to the baghouses. ED-1, which is partially transite (asbestos cement) duct, exhausts through a scrubber and was installed in the late 1970's. All other ductwork is sheet metal, except the vacuum line which is PVC piping. Not all ductwork and exhaust systems remaining in the plant are shown including window and lavoratory exhaust fans, roof ventilators, miscellaneous exhaust systems, boiler room ventilation shafts, attic ductwork and roof mounted ductwork. Ductwork at the air pollution control equipment in the areaway is shown schematically and not all duct and fans connected to this equipment is shown.

The plant is served by municipal sanitary sewers and some building drains are shown on Drawing No. 1. A branched floor trench running north-south through Area 3 discharges through a building drain at the northwall. Floor drains in Areas 4 and 5 and plumbing fixtures in Area 3 discharge to this floor trench. An overflow dam at the north end has caused a bottom sludge to be deposited in the trench. Two other building drains are located along the west wall, one of which serves floor drains in Area 8. The interconnection of building drains is not completely defined, and not all floor drains, manholes and pits in the building are shown on the drawing. The manholes and pits may contain sand and miscellaneous debris. The west floor trench running east-west through the center of the building is a pipe trench to which wastewater is not normally discharged directly and contains sand and miscellaneous debris.

Roof drains along the north and west walls presumably discharge to the sanitary sewer. Roof drains along the east and south walls discharge onto the paved south yard area and percolates into the ground near the southeast corner of the plant building. There are no known dry wells on the property.

Site History

Recorded property owners of the site are listed in Table 2. Estimated construction data of the various parts of the building are presented in Figure 1.

The site was probably undeveloped until about 1910 when Building 1, the two story portion, was constructed. Building 2, with an attic, and Building 3, which presently encloses Area 11, were constructed between 1910 and 1945. Use of these buildings until ownership by

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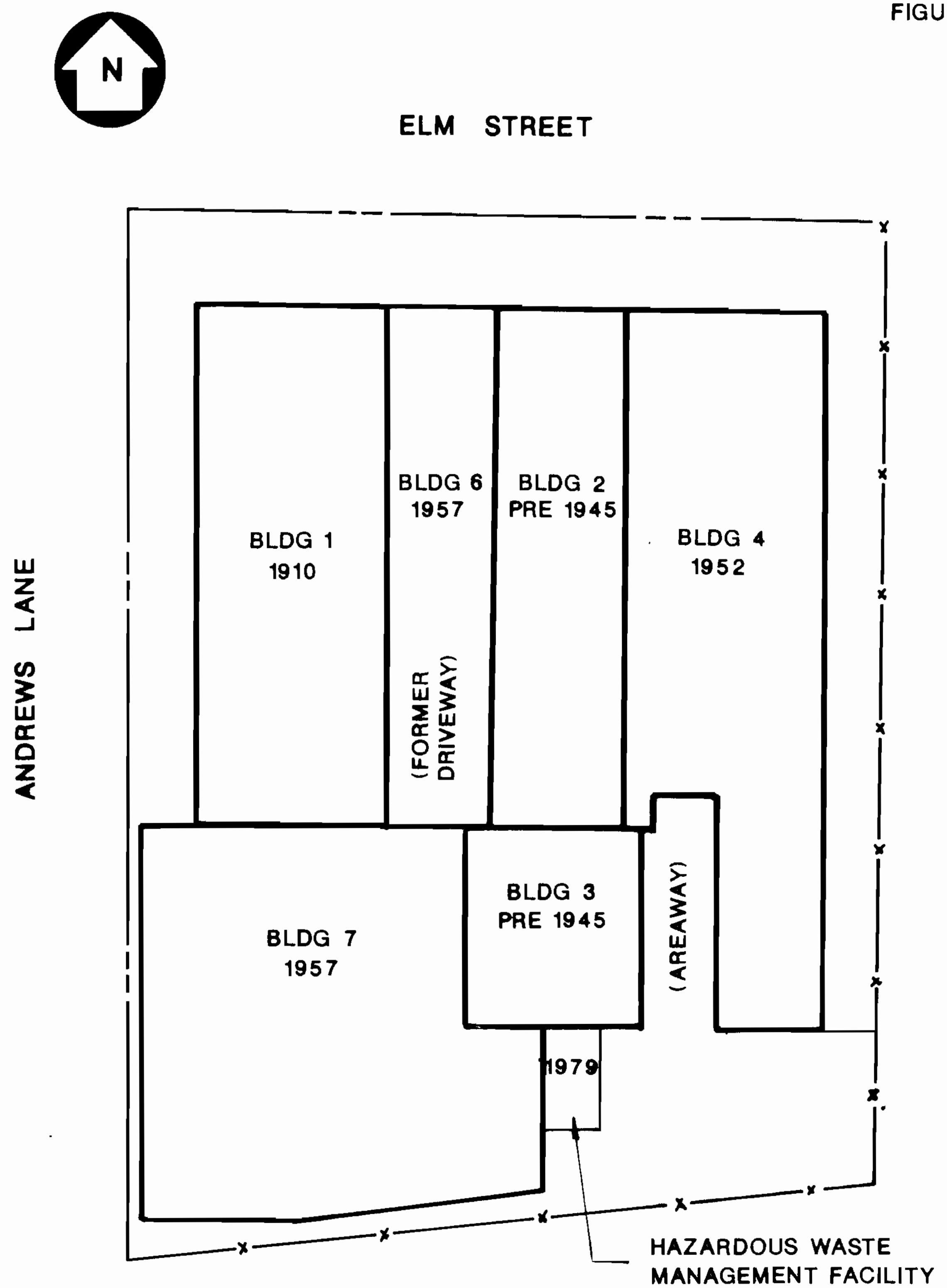
TABLE 2

60 ELM STREET
RECORDED PROPERTY OWNERS

Owner	Transfer Date
Stephen D. Beekman	June 22, 1860
Mary C.L. Andrews	Unknown
George C. Andrews and Julie Andrews	February 21, 1925
Sam A. Miller and John A. Miller	April 14, 1925
Narco, Inc.	January 11, 1928
John H. Miller	November 30, 1928
Westchester Lighting Company	October 20, 1945
P.R. Mallory and Company, Inc. (presently Duracell Inc.)	

FIGURE 1



BUILDING CONSTRUCTION DATES

Westchester Lighting Company is not known. A school district map, latest revision in 1971, refers to Building 1 as a paint shop and Buildings 2 and 3 as storage buildings. Interviews with long time residents suggest that Westchester Lighting Company used the site for a motor vehicle maintenance garage, piping assembly, and storage of telephone poles, supplies and equipment.

P.R. Mallory, the predecessor company of Duracell, purchased the property in 1945. Building 4, the one story portion on the east side, was constructed in about 1952. The air pollution control equipment in the areaway was probably installed at this time. About 1957, the driveway between the oldest buildings was enclosed to form Building 6. At the same time Building 7, at the southwest corner of the property, was constructed for shipping and receiving. The Hazardous Waste Management Facility was constructed in 1979.

Manufacturing Activities

Since 1945, a variety of battery types have been manufactured at the plant, including:

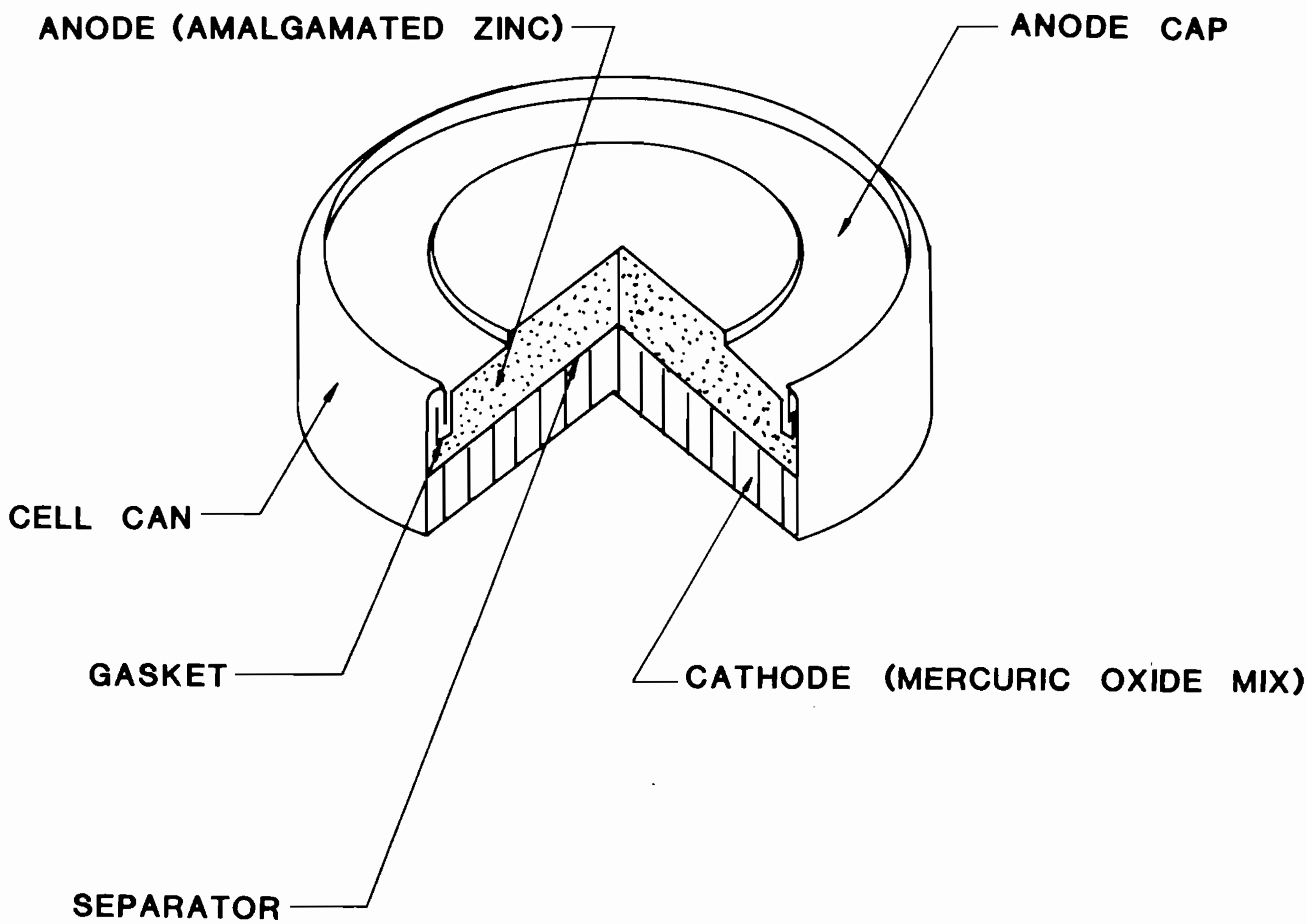
Type	Production Period
mercury-zinc cells	late 1940's to mid 1970's
silver oxide-zinc cells	mid 1960's to mid 1970's
lithium-SO_2 cells	mid 1970's to 1985
lithium solid cells	mid 1970's to early 1980's

Several other types of batteries were also manufactured in limited quantities for prototype and test purposes.

Mercury - Zinc Cells Manufacturing

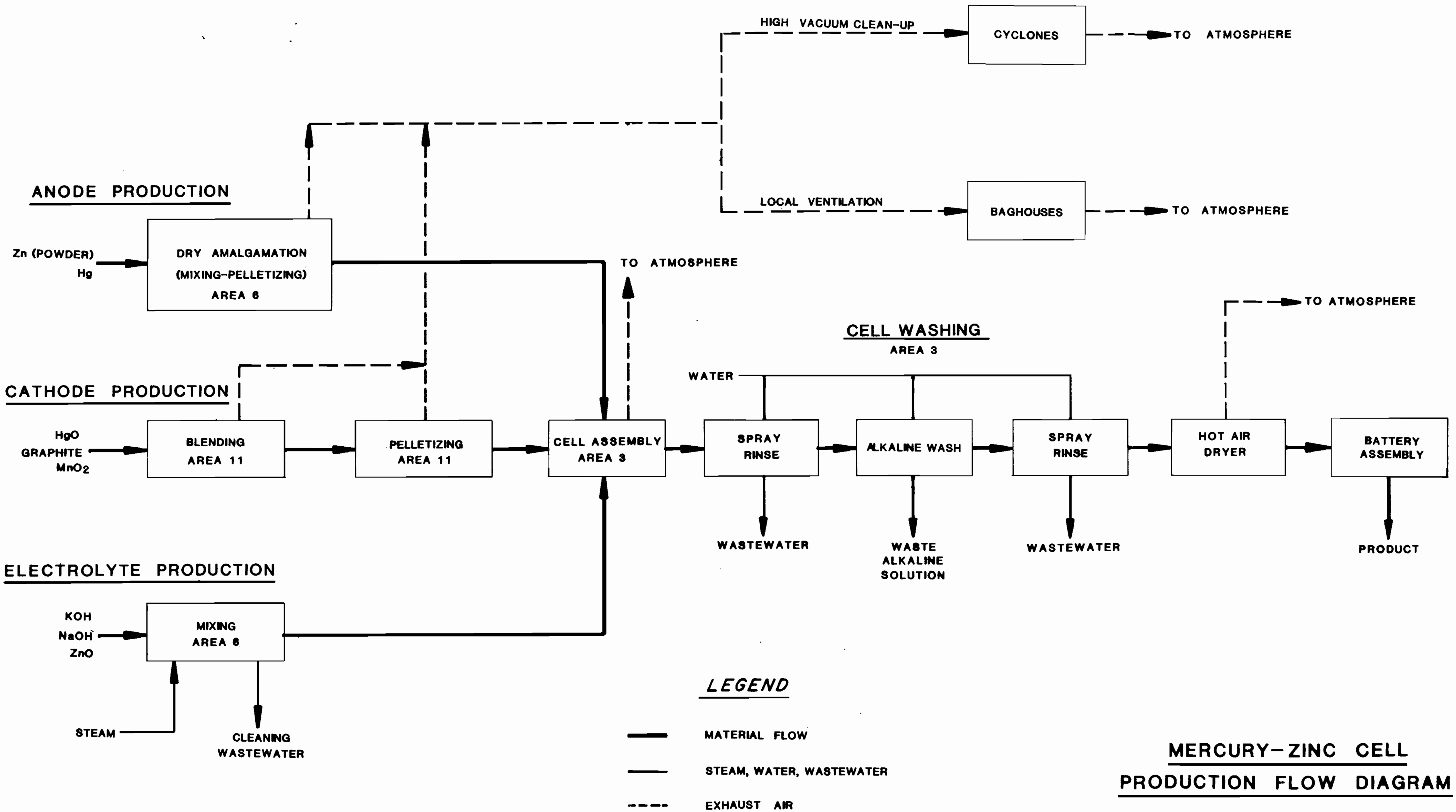
The earliest type of mercury-zinc batteries produced at the facility are illustrated in Figure 2. A production flow diagram is presented in Figure 3. The anode was amalgamated zinc produced in

FIGURE 2



TYPICAL MERCURY-ZINC CELL

FIGURE 3



MERCURY–ZINC CELL PRODUCTION FLOW DIAGRAM

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

Area 6 by mixing and pelletizing zinc powder and metallic mercury. The pellets were collected in plastic containers which were sealed and transferred to cell assembly area, performed in Area 3. After the 1950's, premixed granular zinc coated mercury was purchased and only pelletizing was performed on-site. The cathode was produced by blending mercuric oxide with graphite and manganese dioxide and pelletizing. The blending and pelletizing operations were performed in Area 11, prior to the construction of the existing dry room. The cathode pellets were pressed into cell cans and transferred to the cell assembly area. Metallic mercury was received in 15 pound flasks. Zinc, mercuric oxide, graphite and manganese dioxide for anode and cathode production were received in powder form packaged in cardboard containers. Dust control in Areas 6 and 11 was provided by local ventilation exhausted through the existing outside baghouses.

Cell electrolyte was a mixture of sodium and potassium hydroxide and zinc oxide. Hydroxide solutions were received in 55 gallon drums. In Area 6 the materials were mixed in a steam kettle, cooled, pumped into 5 gallon containers and transferred to the cell assembly area.

Cell assembly was performed manually on a conveyor line along the east wall of Area 3 and the present areas 4 and 5, which were constructed at a later date. Anode pellets and electrolyte were manually added to the cell cans which were then sealed. Cells were then washed by rinsing, alkaline cleaning and final rinsing. Cleaned cells were dried and assembled into batteries and packaged for shipment. Rinse wastewater was discharged into the open grate floor trench in Area 3. Dust control was provided by local ventilation exhausted to the atmosphere.

Equipment and dry spills were cleaned using a high vacuum system which discharged through the existing outside cyclones. Electrolyte production equipment was periodically cleaned by wet washing.

Silver Oxide - Zinc Cells Manufacturing

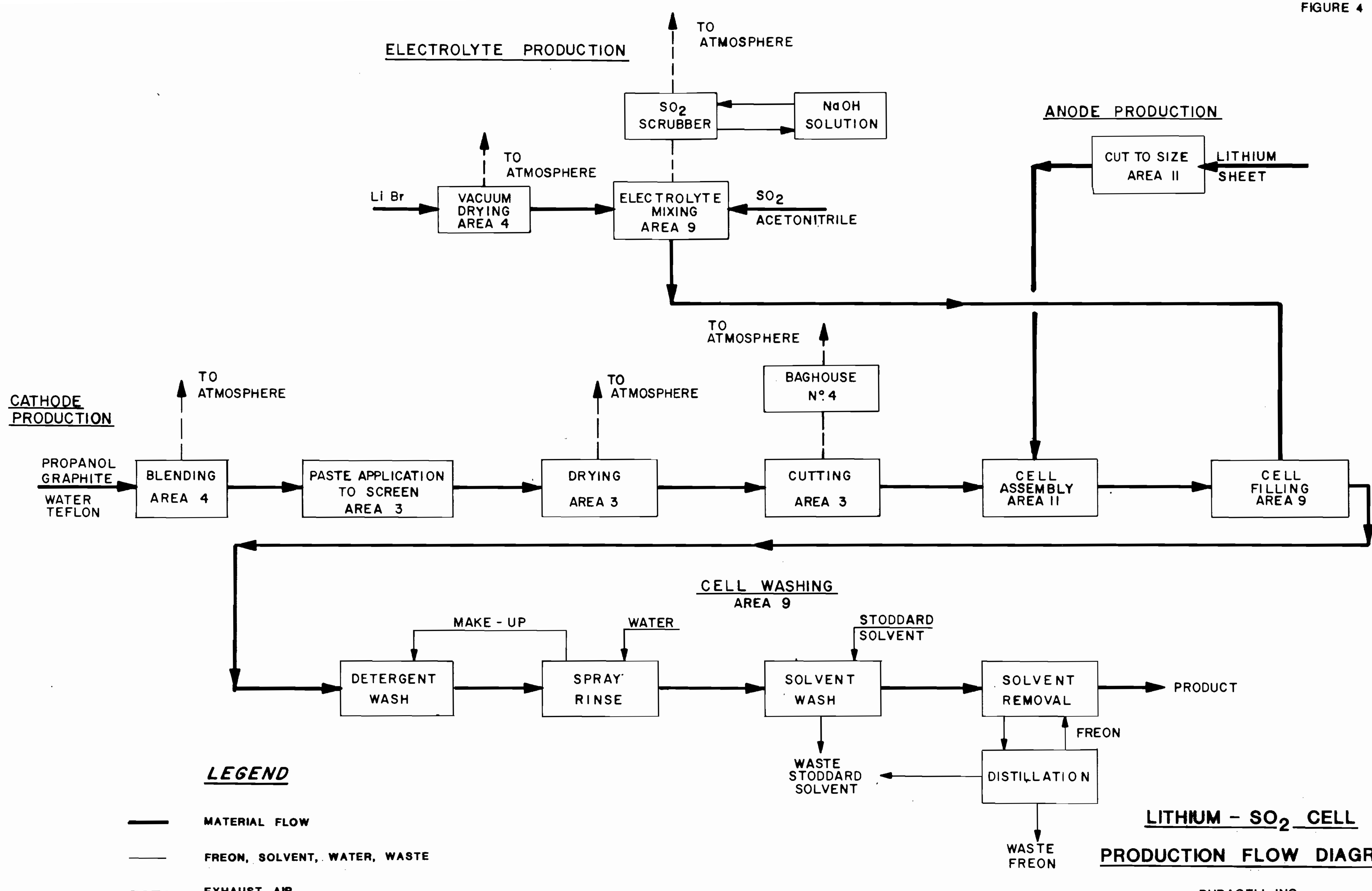
Silver oxide-zinc cells were produced in the same manner as mercury-zinc cells, except that silver oxide was used instead of mercuric oxide in cathode production.

Lithium - SO_2 Cells Manufacturing

Since about 1975, production has been limited to lithium type batteries. Since lithium reacts with water, the material must be handled under dry conditions. The dry room was constructed in Area 11 to provide a humidity controlled environment for anode production. Other operations involving lithium are performed in environmentally controlled glove boxes or closed systems. Areas 4 and 5 were also constructed at this time for lithium battery manufacture.

A production flow diagram for lithium SO_2 cells is presented in Figure 4. Anode strips were cut from lithium sheets in the dry room. The cathode was produced by formulating a paste of graphite, propanol, water and teflon dispersant which was applied to an aluminum screen, dried in ovens, and cut to size. Blending was performed in Area 4 under local ventilation exhausted to the atmosphere. This area has a floor drain connected to the East Floor Trench. Application, drying and cutting of the screens was performed along the east wall of Area 3 about 35 feet from the East Floor trench. The impregnated screen was pressed between rollers (calendar) and dried. Alcohol and water pressed out by the calendar was collected in drip pans which drained to small safety containers. Periodically the container was hand carried to the hazardous waste storage facility and the contents were transferred to 55 gallon drums. Gas and electric fired drying ovens exhausted to the atmosphere. Dust control for the cutting operation was provided by local ventilation exhausting through baghouse No. 4. The cathodes were transferred to the dry room for installation with anodes into cell cans. The cans were capped and transferred to Area 9 for filling with electrolyte.

FIGURE 4



LITHIUM - SO_2 CELL PRODUCTION FLOW DIAGRAM

DURACELL INC.

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The paste would be considered a hazardous waste if disposed because of the ignitability of propanol. If spillage of the paste had occurred, the propanol would have evaporated leaving a residue of carbon on the floor. The paste itself is viscous and any spillage to the floor would not have readily flowed to floor drains. However if the paste did reach the drains soluble waste would have been flushed to the sanitary sewer. Cleaning of equipment was not normally required other than vacuuming to remove carbon residues.

Cell electrolyte consisted of sulfur dioxide, SO_2, mixed in an organic solvent, acetonitrile, with an inorganic salt, lithium bromide. The salt was received in sealed containers and vacuum dried in Area 4 to remove any residual moisture in a a helium filled glove box, the salt was transferred from the shipping container into a closed drying vessel which was placed in a drying oven. A small pressure relief valve on top of the vessel was opened and the vacuum electric drying oven exhausted to the atmosphere. After the drying period, the relief valve was closed and the glove box was again filled with helium. The dry salt was then transferred from the drying vessel into a filling vessel. Salt losses to the atmosphere were negligible.

The electrolyte was formulated in a closed system consisting of four interconnected glass cylinders which were located in Area 9. Acetonitrile was received in 55 gallon drums and stored in the concrete block addition along the west wall of the plant, room 34. The acetonitrile was pumped by air pressure from the storage drums through valved piping into the cylinders. When the cylinders were filled, sealed glass containers with dry lithium bromide were attached to the top of the cylinders using a valved connection. The salt was transferred to the cylinders under vacuum. The valve was then closed and the empty container was removed. SO_2 from pressurized cylinders was then added to the cylinders through valved piping. The electrolyte was mixed by pumping between cylinders and a sample was withdrawn for analysis through a syringe connection. If acceptable, the electrolyte was pumped into a closed storage tank of about 40 gallons capacity. Cells were filled by pumping electrolyte from the tank through a manifold. Local ventilation exhausting through a scrubber was provided to capture fugitive amounts of SO_2 which may be lost along the fill line.

If electrolyte did not conform to specifications, the cylinders were vented to a ventilation system discharging through the scrubber. The cylinders were then drained into a plastic lined 55 gallon drum. Periodically the system was cleaned by flushing with acetonitrile which was also drained into the drums. The drums were sealed and transferred to the hazardous waste storage facility by hand trucks.

The electrolyte would be considered a hazardous waste, if disposed, because of the ignitability of acetonitrile. Both acetonitrile and SO_2 evaporate quickly and are soluble in water. Lithium bromide is reactive and soluble in water. If electrolyte were spilled to the floor and not wiped up, acetonitrile and SO_2 would have evaporated and exhausted through the scrubber system, leaving a residue of lithium bromide. If any spillage entered the drains, the soluble electrolyte would have been flushed to the sanitary sewers.

The lithium-SO_2 electrolyte cell filling manifold, located in Area 9, was cleaned daily by dismantling the system and dipping the parts in small quart baths of dilute sodium hydroxide. Contaminants removed in cleaning include residual acetonitrile and salts. SO_2 remaining in the acetonitrile would be neutralized by the cleaning solution. The used cleaning solution was transferred into drums which were sealed and transported to the hazardous waste storage facility by hand truck.

This waste is considered hazardous because of corrosivity. Residual solution remaining on equipment or spillage to the floor would evaporate, if not wiped up, leaving a residue of sodium hydroxide, lithium bromide and possibly sodium sulfites. If spillage entered the drains, the soluble waste would have been flushed to the sanitary sewers. The alkaline waste would have been neutralized by the buffering capacity of domestic sewage.

After the cells were filled in Area 9, they were washed, assembled into batteries and packaged for shipment. Washing was performed by dipping in a tank containing a biodegradable detergent wash solution followed by a water spray rinse and dipping in solvent tanks to remove water carryover and in a freon tank to remove solvent carryover. This operation was performed along the west wall of room 32, Area 9. The capacity of each dip tank was between 30 and 40 gallons.

The detergent wash solution was discarded on rare occasions to the sanitary sewer since only minute amounts of contaminants were removed from the cells. Periodically, makeup detergent was added to the wash tank. Rinse water was recycled to the detergent wash tank. The production of lithium batteries did not generate a significant wastewater discharges. Under the Westchester County Industrial Pretreatment Program investigation, Duracell was classified as a non-significant industrial user. The investigation had shown that domestic wastewater and non-contact cooling water were discharged to the sanitary sewers.

Normally solvent and freon were the only wastes from the washing operation. Periodically, when the solvent tank became contaminated with water, it was discarded by pumping into drums. The sealed drums were transferred to the hazardous waste storage facility by hand truck. The solvent, Stoddard Solvent also known as mineral spirits, was a hazardous waste, when disposed, because of ignitability. The solvent evaporates quickly. It has a specific gravity less than 1 and being insoluble in water would tend to float. Residual solvent remaining in the tank or spillage to the floor would evaporate if not wiped up.

Freon (Trichlorotrifluorethane) contaminated by water and solvent was reclaimed in a still. The contaminated solution was heated to evaporate freon which was condensed, collected and returned to the freon dip tank. The dip tank and still formed an enclosed system.

Periodically, the still bottoms were discarded by draining in to drums which were sealed and transferred to the hazardous waste storage facility by hand truck.

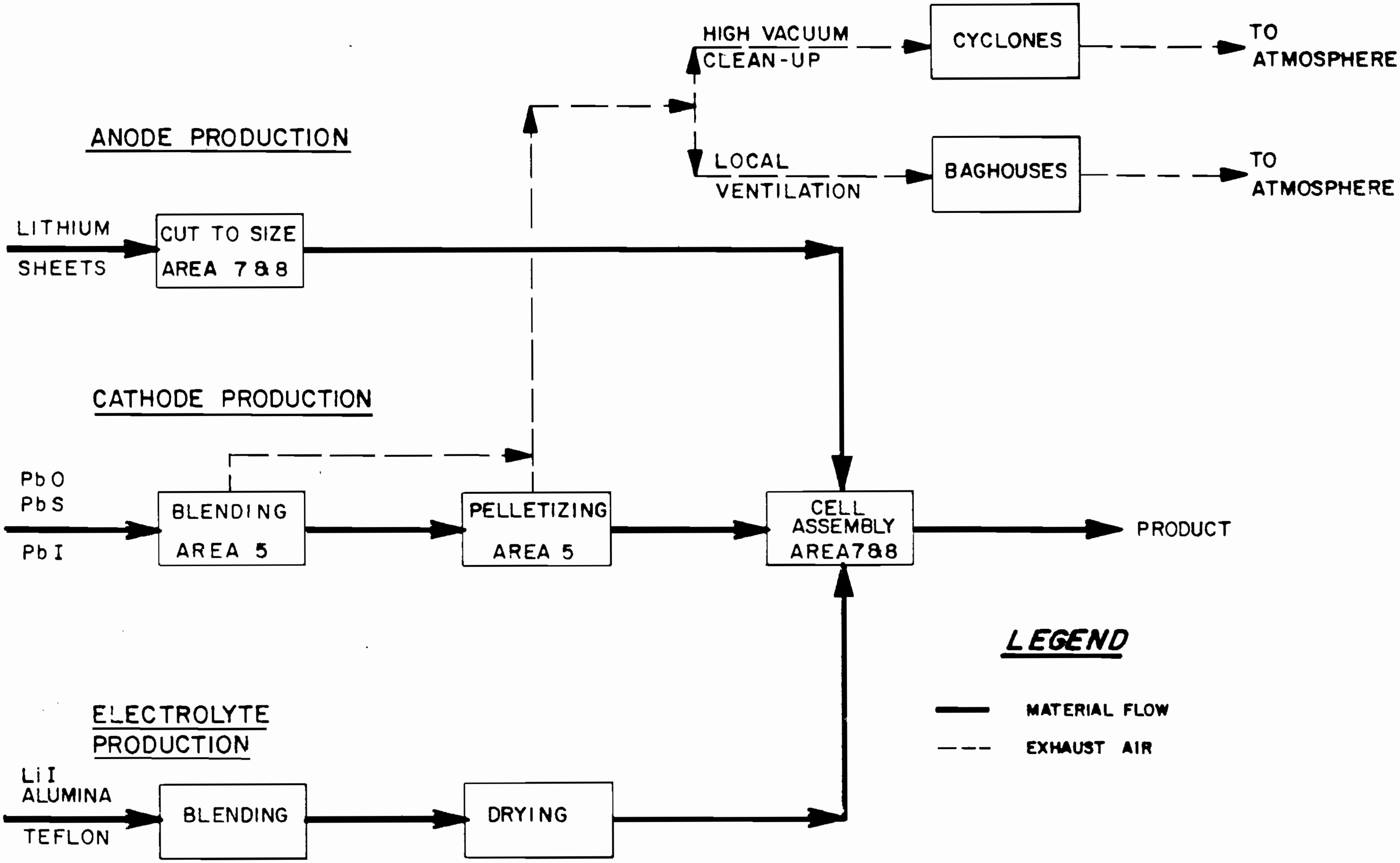
This waste, consisting of freon contaminated by solvent and water, was a hazardous waste, when disposed, because of toxicity. Freon evaporates quickly, has a specific gravity greater than 1, and is slightly soluble in water. Residues of this waste remaining on equipment or spillage to the floor would evaporate if not wiped up.

Lithium Solid Cell Manufacturing

A production flow diagram for lithium solid cells is presented in Figure 5. Anodes were punched from lithium sheets in glove boxes in Areas 7 and 8. The cathode was produced by blending and pelletizing lead oxide, lead sulfide and lead iodide with a teflon powder. These operations are performed in Area 5. Local ventilation through the outside baghouses was provided. Small quantities of electrolyte were also produced by blending and drying lithium iodide, alumna and teflon dispersant in a glove box. The anodes, cathodes and electrolytes were assembled into cells and batteries inside glove boxes and sealed by laser welding. These cells were not washed and did not generate wastewater.

Equipment handling dry materials was cleaned using a high vacuum system discharging through the cyclones. The lithium-SO_2 battery electrolyte mixing and filling equipment was periodically disassembled for cleaning. The parts were dipped in sodium hydroxide baths. Waste solution was handled as a hazardous waste.

FIGURE 6



LITHIUM SOLID CELL PRODUCTION FLOW DIAGRAM

III. INVESTIGATIONS OF CONDITIONS

Investigations

EA made an initial walk-through survey of the plant building in February, 1985 to assess conditions and to develop a sampling program. A thin film of residue was observed on interior surfaces of the building such as floors and exposed shelf areas. Solids, sludges and liquids had accumulated in floor trenches, manholes and pits, and collected particulates remained in air pollution control equipment. Based on the survey, a sampling program was planned and performed in March, 1985 which included:

- Surface sampling
  - building floors and exposed shelf areas
  - ductwork interior

- Grab sampling
  - air handling unit filters
  - air pollution control equipment residues
  - solids, sludges and liquids remaining in trenches and manholes

To evaluate roof conditions, grab samples of roof runoff were obtained in June, 1985. Since manufacturing raw materials included several of the heavy metals specified in the EP toxicity test (40 CFR 261.24) it was decided to analyze the samples for all metals of the test and zinc. Organics used in manufacturing were volatile and not expected to be present on the building surfaces.

The methods and results of these investigations were reported in the Engineering Report Evaluating On-Site Residues. This report proposed a remediation program which provided for the test cleaning of one of the rooms in the building to evaluate cleaning methods and document the level of cleanliness which can be achieved.

DURACELL INC.
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TABLE 3

BUILDING SURFACE METAL CONCENTRATIONS (1985)

Area	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Zinc
1 floor	<.0014	.99	.011	.034	.35	.11	<.0014	.015	3.0
ceiling	<.0014	.12	.030	.070	.78	1.2	<.0014	.073	4.0
2 floor	<.0010	.84	.0084	.0068	.27	.39	.0019	.015	1.3
ceiling	.0035	1.5	.046	.25	1.2	.56	.0058	.13	21.
3 floor	<.0015	1.2	.069	.18	8.6	1.1	.0043	.11	3.6
ceiling	.014	.24	.26	.30	2.2	3.7	.0046	.34	13.
4 floor	.34	1.7	.41	.13	10.	3.4	<.0014	.11	3.7
ceiling	4.4	.96	.81	.37	4.6	30.	<.0020	.15	7.1
5 floor	.010	2.1	.36	.079	220	6.9	.012	.15	4.6
ceiling	.014	.06	.15	<.0023	56.	.56	.0023	.058	.98
6 floor	.016	.59	.14	.063	1.8	.82	.0035	.24	13.
ceiling	.035	.71	.72	.15	11.	5.6	.010	.36	36.
7 floor	.033	.23	.054	.043	4.5	1.2	.0036	<.0015	6.2
ceiling	.0068	.13	.28	.072	2.2	4.5	<.0011	.19	34.
8 floor	.0044	1.3	.028	.061	1.7	.21	.0035	2.6	5.1
9 floor	.014	1.9	.060	.17	2.7	.61	.0013	< .0015	9.0
10 floor	.048	.64	.099	.13	4.0	1.9	.0016	.086	5.7
a.2	.0054	1.3	.059	.044	7.2	.64	.00045	.071	6.5
11	<.00053	.070	.038	.027	.38	.30	<.00053	.028	.81
a.	.0078	.050	.0024	.0068	.062	.076	<.00060	.011	2.2
b.	.0054	.074	.078	.022	.17	.11	.00066	.027	.61
c.	.017	2.7	.063	.044	1.4	2.4	.0010	.083	10.
12 floor	.0037	3.0	.047	.085	1.7	.97	<.0012	.27	5.5
ceiling	<.0021	1.0	.060	.10	.91	.35	<.0021	.037	44.
13 floor	.039	1.5	.13	.46	5.0	17.	.0060	.63	12.
14 floor	.076	2.7	.11	2.5	3.1	9.3	<.0021	.14	28.
15 floor	.097	1.2	.041	.62	5.5	2.6	<.0022	.29	31.

NOTES: All units are mg/sf

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TABLE 4

DUCT WIPE SAMPLE ANALYSIS (1985)

Sample Designation	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Zinc
ED-1	3.4	8.4	11.	150.	170.	660.	4.4	< .23	260.
ED-2	1.3	12.	3.8	7.4	210.	14.	.078	< .092	3.0×10^4
ED-3	.0065	.18	.059	.050	1.5	680.	< .00072	130.	72.
ED-4	.0065	.29	.073	.31	1.3	.85	< .00074	.074	30.
ED-5	.012	.048	.020	.11	.70	.36	< .0013	< .0016	.62
ED-6	.068	.19	.039	.042	1.5	1.6	.0010	.0032	20.
ED-7	.018	.70	.024	.28	2.2	.83	< .0013	< .0015	.81
ED-8	.0034	.44	.037	.032	1.6	.22	< .0013	< .0014	2.7
SAD-1	.00079	.028	.010	.037	.22	1.08	< .00087	.011	15.
RAD-2	.012	.41	.24	.072	2.4	16.	.0060	.067	61.

NOTE: All units are mg/sf

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE 5

AIR HANDLING UNIT
FILTER ANALYSIS (1985)

Sample Designation	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Zinc
AHU-1	0.43	12.	3.7	5.4	230.	640.	0.85	7.8	210.
AHU-2	3.6	160.	35.	34.	1,100.	700.	2.6	16.	12,000.
AHU-3	< 0.78	37.	7.0	5.3	330.	480.	3.1	13.	480.
AHU-4	2.8	170.	32.	67.	1,400.	460.	1.1	11.	1,900.
AHU-8, 9, 10	1.1	110.	7.8	13.	660.	47.	1.1	8.4	540.

NOTE: all units are mg/kg (as received)

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NORTH TARRYTOWN, NEW YORK

TABLE 6

MISCELLANEOUS SAMPLE ANALYSIS (1985)

Sample	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Zinc
East Floor Trench	< .20	14.	45.	19.	480.	120.	< .20	81.	8,200.
West Floor Trench	13.	690.	41.	20.	790.	430.	.24	74.	5,400.
Manhole Area 7	4.5	78.	16.	120.	1,100.	860.	< .24	290.	25,000.
Baghouse 1, 2 & 3	.7	140.	6.7	4.5	190.	650,000.	1.6	110,000.	1,000.
Baghouse 4	.23	< 2.3	.70	< 0.50	6.4	11.	< .23	6.9	18.
Cyclone	1.5	26.	28.	2.8	18,000.	660,000.	.20	64,000.	1,900.

Note: all units are mg/kg

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TABLE 7

MISCELLANEOUS E.P. TOXICITY SAMPLE ANALYSIS (1985)

Sample	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Zinc
RCRA Limits	5.0	100.0	1.0	5.0	5.0	.2	1.0	5.0	--
East Floor Trench	.01	< 1.0	< .01	< .01	< .03	1.79	< .01	.13	.52
West Floor Trench	< .01	< 1.0	.02	< .01	.04	2.27	< .01	< .01	.26
Manhole Area 7	.01	< 1.0	< .01	< .01	< .03	.007	< .01	.01	1.00
Baghouse 1, 2 & 3	< .01	< 1.0	< .01	< .01	<.03	23.95	.02	.14	4.32
Baghouse 4	< .01	< 1.0	<.01	< .01	<.03	1.09	.01	< .01	.07
High Vac	< .01	<1.0	.20	< .01	.24	27.75	.01	< .01	3.66
Area 3 Sheetrock	< .01	< .05	< .01	< .01	<.03	< .01	< .01	< .01	.11

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TABLE 8

MISCELLANEOUS TANK SAMPLE ANALYSIS
1985

Analysis	RCRA Limits	KOH Tanks	Scrubber Tank	Concrete Pit
pH	2- 12	13.8	9.9	--
Reactivity	--	none	none	--
Arsenic	5.0	0.24	0.58	0.01
Barium	100.0	0.05	0.05	0.05
Cadmium	1.0	0.01	0.01	0.61
Chromium	5.0	0.79	0.01	0.01
Lead	5.0	0.48	0.03	0.03
Mercury	0.2	0.01	0.08	0.01
Selenium	1.0	0.01	1.21	0.01
Silver	5.0	0.10	0.05	0.01
Cyanide	--	--	--	0.02
Zinc	--	0.01	0.32	0.07

Note: all units are mg/l

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TABLE 9

ROOF RUNOFF ANALYSIS (1985)

Sample Designation	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Zinc
RCRA Limits	5.0	100.0	1.0	5.0	5.0	.2	1.0	5.0	—
RRO-1	.003	<.05	< .003	<.01	.18	.09	.002	< .006	.55
RRO-2	.003	<.05	< .003	<.01	.16	.04	< .001	< .006	.96
RRO-3	< .001	<.05	< .003	<.01	<.025	.002	< .002	< .006	.72
RRO-4	.001	<.05	< .003	<.01	.060	.01	< .002	< .006	.76
RRO-5	.011	.32	< .003	<.01	.893	.19	< .002	< .006	1.1
RRO-6	.002	<.05	< .003	<.01	.167	.008	< .002	< .006	.48
RRO-7	.007	<.05	< .003	<.01	.283	.008	< .002	< .006	.55
RRO-8	.14	4.3	.05	.383	19.28	11.2	.05	.488	11.0
RRO-9	.02	.44	< .003	<.01	1.5	.18	< .002	< .006	1.1

NOTE: All units are mg/l

Area 4 was selected for the test cleaning. EA prepared "Contract Documents for Test Cleaning", August 1986, for the performance of the work and "Quality Assurance Program Plan for Test Cleaning at Duracell Inc., North Tarrytown, New York", August 1986, which presented the sampling and analysis plan to determine the effectiveness of the test cleaning. These documents were transmitted to the DEC on August 18 and 22, 1986 and their review did not result in comments. Clean Venture Inc., Perth Amboy, New Jersey peformed the work between October 20th and 27th, 1986. EA performed the documentation sampling and presented the results in "Test Cleaning Documentation Report" January, 1987 which was submitted to the DEC on January 15, 1987.

Additional surface sampling was performed in January, 1987 to further define building conditions. The methods used were the same as those reported in the on-site engineering report. The results of this sampling are presented in this report.

Results

The results of sampling performed in 1985 are presented as follows:

Table 3 - Building Surface Metal Concentrations*
Table 4 - Duct Wipe Sample Analysis
Table 5 - Air Handling Unit Analysis
Table 6 - Miscellaneous Sample Analysis
Table 7 - Miscellaneous EP Toxicity Sample Analysis
Table 8 - Miscellaneous Tank Sample Analysis
Table 9 - Roof Runoff Analysis

*Ceiling values refer to shelf areas below the ceiling including top of ducts, piping and light fixtures. The values for area 9 and 14 are for combined floor and ceiling samples.

Lead, mercury and zinc were found to be present in the highest concentrations. Zinc, an essential nutrient, is not considered to pose a potential health risk and is not a criteria metal for hazardous waste determinations. For subsequent investigations, analyses was limited to lead and mercury.

The results of sampling Area 4 prior to the test cleaning performed in 1986 are presented in Tables 10 and 11.

The results of the additional investigation performed in January 1987 are presented in Tables 12, 13 and 14.

Analysis

The estimated total quantity of metals remaining on the plant building surfaces are summarized in Table 15. Most of the metals are considered to be in the hoppers of air pollution control equipment. Other locations where metals remain are liquids, sludges and debris remaining in floor trenches, manholes and pits, gravel on the roof above Area 10 and attic insulation. Less than one percent of the total quantity of metals remaining is contained in the residues on the surfaces of the building structure. Small quantities of metals, remaining inside ductwork, air handling units and fans, cannot be estimated with accuracy and are not included in the Table.

The quantity of metals remaining in air pollution control equipment, consisting of the three baghouses and two cyclones located in the areaway are based on the analysis data presented in Table 6 and assumes that the hoppers are full of collected particulates. The baghouses are assumed to contain 64 cubic feet (cf) and the cyclones 34 cf of particulates having a mercury content of about 65 percent. Bulk density of the particulates is estimated as 375 lbs/cf. Not included in this estimate of remaining metals is the small amount of metals remaining in baghouse No. 4. Although the baghouse is filled with collected particulates, it is a relatively small unit compared to the outside air pollution control equipment and the metal content is comparatively low.

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NORTH TARRYTOWN, NEW YORK 10

TABLE 10
AREA 4

WIPE SAMPLING OF CEILING COMPONENTS PRIOR TO CLEANING
1986

Sample Description	Area Concentration Mercury	Area Concentration Lead
Underside of ceiling	0.02	N.D.
Topside of ceiling	0.02	0.12
Topside of insulation	0.12	0.31
Underside of roof	0.02	0.03
Shelf Area above ceiling	0.47	3.60

Note: All units in mg/sf.

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TABLE 11
AREA 4

PLASTERBOARD CEILING AND INSULATION SAMPLE ANALYSIS
1985

Sample	Metal Content (mg/kg) Mercury	Metal Content (mg/kg) Lead	Leachable Metals (mg/l) Mercury	Leachable Metals (mg/l) Lead
E.P. Toxicity Standard	---	--	0.2	5.0
Ceiling	0.04	19.6	0.0033	0.15
Insulation	0.02	14.0	0.0011	0.03

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TABLE 12

SURFACE CONCENTRATIONS
1987

Area	Lead	Mercury
1	0.043	0.0003
2	--	--
2 (concealed)*	0.17	0.0045
2 (concealed floor)*	2.70	0.17
3 (N,S,& E)	0.15	0.011
(N,S,& W)	0.054	0.012
4	--	--
5	--	--
6	--	--
7	--	--
8	--	--
9	0.046	0.0064
10	3.41	0.070
11	--	--
12	0.093	0.0058
13	--	--
14	--	--
15	--	--

Note:

Surface concentrations are mg/SF measured on wall surfaces except as noted.

* Behind paneling.

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TABLE 13

SURFACE CONCENTRATIONS
CEILING COMPONENTS
1987

Area	Fixed Ceiling Underside	Fixed Ceiling Topside	Insulation Topside	Shelf Area	Roof or Upper Floor Underside
		LEAD CONCENTRATIONS			
1	0.026	1.04	0.43	--	0.106
Room 4		2.59			
3	0.24	2.10	0.45	4.76	0.16
7	BDL	0.71	1.12	0.80	4.91
12	0.021	10.06	--	--	0.17
		MERCURY CONCENTRATIONS			
1	0.0012	0.101	0.046	--	0.013
Room 4		0.65			
3	0.034	0.37	0.68	0.37	0.024
7	0.0013	0.056	0.14	0.13	0.008
12	0.0021	1.062	--	--	0.009

* Prior to test cleaning

Notes:

Surface concentrations are mg/SF
BDL - Below detectable limits

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NORTH TARRYTOWN, NEW YORK

TABLE 14

PLASTERBOARD CEILING, INSULATION AND
ROOF SAMPLE ANALYSIS
1987

Area	Component	Content, mg/kg Lead	Mercury
1	Ceiling Tile	227.	4.7
	Plasterboard	20.7	11.7
	Insulation	42.6	0.8
3	Plasterboard	72.8	25.3
	Insulation	29.2	0.7
7	Room 28		
	Ceiling Tile	18.0	8.9
	Insulation	83.1	9.9
	Room 46		
	Plasterboard	568.	13.8
10	Roof	290.	500.
11	Roof	22.	2.9
12	Plasterboard	132.	23.6
	Ceiling Tile	24.2	9.8
13	Insulation	120.7	19.9

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TABLE 15

SUMMARY
BUILDING METAL RESIDUES

Location	Lead	Mercury
1. Air Pollution Control Equipment	234.	24,000.
2. Floor Trenches, Manholes And Pits	42.	22.
3. Roof	8.	15.
4. Attic Insulation	1.0	0.2
5. Building Surfaces	1.5	0.6
Total	287.	24,038.

Notes: Units are pounds.

The quantity of metals contained in the liquids, sludges and debris remaining in floor trenches, pits and manholes are based on the analysis data presented in Table 6 and the following estimated quantities:

East Floor Trench - 15,000 lbs. of liquid and sludges.
West Floor Trench - 375 cf of debris at 100 lbs./CF.
Pits (floor) - 50 cf of debris at 100 lbs./CF.

The quantity of metals contained in the gravel on the roof above Area 10 is based on the analysis of the 1987 sample and the following estimated quantity:

Area:	14,000 square feet
Average depth:	1/4 inch
Density:	100 lb./CF

The quantity of metals contained in the gravel on the roof above Area 11 is relatively small because of the small area and relatively low metal content.

The quantity of metals contained in the attic insulation is based on the analysis data presented in Table 14 and the following estimated quantity:

Area:	8,000 square feet
Depth:	6 inches
Density:	2 lbs./CF

Calculations to estimate the quantity of metals remaining on the surface of the building are presented in Appendix A. The calculations are based on the surface metal concentration data presented in Tables 3,10,12 and 13 and the areas of:

- floors
- walls
- shelf areas below ceiling such as the top of ducts, piping and light fixtures.
- ceiling components including
  plasterboard - underside and topside
  insulation - topside
  shelf area above plasterboard
  roof or second floor - underside
- miscellaneous surfaces such as floors and wall area behind paneling.

The distributions of metals on the building surfaces are presented in Table 16. Most of the metals are on the floors.

Other Findings

Areal concentrations on the interior surfaces of ductwork are summarized in Table 4. Several systems have notably high concentrations of metals. Ductwork system ED-1, serving area 9 where lithium-SO_2 cells were filled with electrolyte, contains a considerable amount of sludge with high concentrations of several metals. Plant personnel report that this system has a high discharge, creating a negative pressure condition in the area. Contaminants drawn from other areas of the plant by induced air flow under the negative pressure condition may have accumulated in the sludge. Ductwork system ED-2, serving area 8, where lithium solid cells were assembled in glove boxes, contains high concentrations of lead and zinc. The latter may be due to the lead based cathodes used in the batteries. The presence of zinc may be due to flakes of the ductwork which were collected with the sample. Ductwork system ED-3, located in area 7, contains high concentrations of mercury. Return air duct

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NORTH TARRYTOWN, NEW YORK

TABLE 16

BUILDING SURFACE METALS DISTRIBUTION

Surface	Percent of Total: Lead	Percent of Total: Mercury
Floor	63.5	82.3
Wall	9.1	0.6
Shelf	4.7	5.7
Ceiling	20.7	7.4
Miscellaneous	1.9	3.9

RAD-2, showed higher concentrations. Supply air duct SAD-1, suggesting that the AHU filters are effective in removing metal containing particulates. Analyses of AHU filter samples are summarized in Table 5. All filter samples contain high concentrations of lead, mercury and zinc.

EP toxicity tests performed on these samples of sludge and solid samples from floor trenches, internal manholes and residual materials in air pollution control equipment are summarized in Table 7. All samples, except the residue in manhole Area 7, are hazardous due to leachable mercury. A sample of the partition wall in Area 3 was also analyzed and shown not to exhibit the characteristics of a hazardous waste.

Also plasterboard and insulation samples from Area 4 did not exhibit the characteristics of hazardous wastes. Table 11 presents the lead and mercury content and leachability of these samples. Leachate metals were below the EP toxicity criteria. Table 14 presents the lead and mercury content of other ceiling components.

Analyses of liquids remaining in the SO_2 scrubber solution tank, KOH tanks and concrete pit are presented in Table 8. These liquids would be considered hazardous wastes if their metal content exceed the EP toxicity (RCRA) concentrations, or they exhibit the characteristic of corrosivity, i.e. pH outside the range of two to 12. The KOH tank liquid exceeds RCRA limits for pH only. The scrubber tank liquid exceeds the RCRA limit for selenium only. These liquids have since been removed to a permitted hazardous waste disposal facility. The concrete pit liquid contained low concentrations of metals well below RCRA limits.

Analysis of roof runoff samples is presented in Table 9. With the exception of sample RR-08, metal concentrations were below RCRA limits. Sample RR-08 is runoff from the roof above Area 10 which is a composition roof with gravel.

IV. BUILDING CLEANING

The EA investigations identified residues containing lead and mercury on interior surfaces of the plant building and in ductwork, air pollution control equipment, floor trenches, interior manholes and on part of the roof.

Duracell proposes to clean the building so that only trace amounts of lead and mercury remain and the debris resulting from the building demolition can be disposed to a C&D landfill. The proposed cleaning program is designed on a cost-benefit basis to remove 99.8 percent of the metals on the surfaces of the building remaining based on Table 15. Air pollution control equipment, floor trenches, manholes and pits, and the roof will be cleaned to achieve a 99 percent reduction in lead and 99.99 percent reduction in mercury. Ductwork, fans and air handling units which contain unquantified amounts of metals will also be removed. Equipment and trenches, manholes and pits will be cleaned by a combination of vacuuming and pressure washing. The roof will be vacuumed. Floors will be cleaned to remove potential spillage resulting from the work. Floors will be scrubbed where possible. Some areas such as the boiler room and the scrubber tank room are best cleaned by pressure washing because of interferences to floor scrubbing equipment by piping and mechanical equipment. The attic floor will be vacuumed and insulation removed at the same time. The Hazardous Waste Management Facility will be cleaned by pressure washing in accordance with the RCRA closure plan. Residual surface metals remaining after cleaning would be about 0.5 pounds of lead and 0.1 pounds of mercury. This is insignificant when mixed with an estimated 6,000 tons of building debris.

Proposed Work

The cleaning program includes:

- Removal of all interior and exterior ductwork, fans, and air handling units, and baghouse No. 4;

- Cleaning of air pollution control equipment and storage tanks located in the areaway at the southeast end of the building by a combination of vacuuming and pressure washing;

- Vacuuming of the roof above Area 10;

- Removal of attic insulation;

- Removal of solids, liquids and sludges and power washing, floor trenches, manholes and pits inside the building;

- Pressure washing of all surfaces of Room 58 (scrubber tank room), Area 14 (below grade boiler room), Area 15 (hazardous waste management facility); and

- Scrubbing of all floors, except Area 4, which was cleaned previously and those areas which are to be pressure washed.

Removed ductwork, baghouse No. 4, roof materials, attic insulation and solids, semi-solids, sludges and liquids from air pollution control equipment, trenches, manholes and pits will be packaged, transported and disposed in accordance with New York State Department of Environmental Conservation (DEC) regulations relating to Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (6NYCRR Part 372). Fans and air handling units and other specified mechanical equipment will be cleaned on-site using a combination of vacuuming pressure washing and manual wiping will be transported to a scrap dealer. Cleaned surfaces will be tested to demonstrate that the program objectives have been achieved.

Solids, semi-solids, sludges and liquids resulting from the work will be tested for hazardous waste characteristics and disposed accordingly. Equipment to be scraped will be tested to demonstrate that sampling and analysis of surfaces which have been cleaned will be performed in accordance with a QA/QC plan to provide representative samples; maintain the validity of samples during shipment and analysis; and to document the ability of the laboratory to measure the specified constituents in the sample matrix with an acceptable level of precision and accuracy.

Cleaning will be performed in accordance with a HASP which will provide for the health and safety of workers and other persons who may be affected by the Work and to prevent damage, injury or loss to surrounding properties. Following completion of the work, Duracell will submit a Documentation Report demonstrating that the project objectives have been achieved.

Project Results

Calculations to estimate the quantity of metals expected to remain on the surfaces of the building after cleaning are presented in Appendix B. The calculations assume a reduction in shelf areas because of duct work removal. Residual metal concentrations on surfaces which are to be cleaned, including all floors, all surfaces in Area 14, the boiler room, Area 15, and the Hazardous Waste Management Facility, are estimated to be reduced to 0.1 mg/sf. The existing concentration was used if that value is lower.

Area 4, which had been test cleaned, is not included in the proposed work. Residual metal concentrations in this area are those reported in "Test Cleaning Documentation Report", January, 1987.

APPENDIX A

BUILDING SURFACE METAL CALCULATIONS BEFORE CLEANING

DURACELL INC.
NORTH TARRYTOWN, NEW YORK

TABLE A-1

BUILDING SURFACE METALS
BEFORE CLEANING

Area	Lead	Mercury
1	5,900.	1,000.
2	3,200.	1,300.
3	168,000.	32,000.
4*	8,300.	3,900.
5	142,000.	4,500.
6	5,100.	2,200.
7	21,000.	3,100.
8	6,600.	840.
9	5,100.	1,100.
10	135,000.	30,000.
11	10,000.	11,000.
12	114,000.	19,000.
13	42,000.	140,000.
14	4,700.	14,000.
15	3,300.	1,500.
Total	674,000.	265,400.

Note:

Units are mg.
* Before test cleaning

DURACELL INC.
NORTH TARRYTOWN, NEW YORK

TABLE A-2

BUILDING SURFACE METALS
AREA 1
BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	2500.	0.35	880.	0.11	280.
Wall	10300.	0.04	410.	0.0003	3.
Shelf[(a)]	125.	0.78	98.	1.2	150.
Ceiling					
Underside	2500.	0.03	75.	0.001	3.
Topside[(b)]	2200.	1.04	2300.	0.10	220.
Room 4	300.	2.59	780.	0.65	200.
Insulation[(b)]	2200.	0.43	950.	0.05	110.
Roof					
Underside[(c)]	3750.	0.11	410.	0.01	38.
Total			5903.		1004.

Notes:

(a) 5% of floor area.
(b) All rooms except room 4 have insulation above plasterboard ceiling.
(c) 150% of floor area.

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TABLE A-3

BUILDING SURFACE METALS

AREA 2

BEFORE CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor					
Exposed	2600.	0.27	700.	0.39	1000.
Concealed	200.	2.70	540.	0.17	34.
Walls					
Exposed	12400.	0.04[c]	500.	0.0003[c]	4.
Concealed	5800.	0.1	580.	0.01	58.
Shelf	140.	1.2	170.	0.56	78.
Ceiling[b]					
Underside	230.	0.03[c]	7.	0.001[c]	0.
Topside	230.	2.59[c]	600.	0.65[c]	150.
Second Floor					
Underside					
Exposed	2570.	0.03[c]	77.	0.001[c]	3.
Concealed	230.	0.11[c]	25.	0.01[c]	2.
Total			3199.		1329.

Notes:

(a) 5% of total floor area.
(b) Rooms 21 (partial) and 22 have plasterboard ceilings.
(c) Estimated data based on Area 1.

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TABLE A-4

BUILDING SURFACE METALS

AREA 3

BEFORE CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor	16,000.	8.6	140,000.	1.1	18,000.
Wall	21,500.	0.10[e]	2,200.	0.01[e]	220.
Shelf[a]	1,600.	2.2	3,500.	3.7	5,900.
Ceiling					
Underside	16,000.	0.24	3,800	0.03	480.
Topside[b]	6,000.	2.10	13,000	0.37	2,200.
Insulation[b]	6,000.	0.45	2,700.	0.68	4,100.
Shelf[c]	300.	4.76	1,400.	0.37	110.
Roof					
Underside[d]	9,000.	0.16	1,400.	0.02	180.
Total			168,000.		31,190.

Notes:

(a) 10% of floor area.
(b) East part has plasterboard ceiling with insulation above.
(c) 5% of ceiling area.
(d) 150% of ceiling area.
(e) Average value.

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TABLE A-5

BUILDING SURFACE METALS

AREA 4

BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	750.	10.0	7,500.	3.4	2,600.
Wall	1800.	0.1[c]	180.	0.01[c]	18.
Shelf[a]	37.5	4.6	170.	30.0	1,100.
Ceiling					
Underside	750.	BDL	--	0.02	15.
Topside	750.	0.12	90.	0.02	15.
Insulation	750.	0.31	230.	0.12	90.
Shelf	37.5	3.60	140.	0.47	18.
Roof					
Underside[b]	1125.	0.03	34.	0.02	23.
Total			8,344.		3,879.

Notes:

(a) 5% of floor area.
(b) 150% of floor area.
(c) Estimated data.
BDL - Below detectable limits.

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NORTH TARRYTOWN, NEW YORK

TABLE A-6

BUILDING SURFACE METALS
AREA 5
BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	620.	220.0	140,000.	6.9	4,300.
Wall	1600.	0.1[c]	160.	0.01[c]	16.
Shelf[a]	31.	56.	1,700.	.56	17.
Ceiling					
Underside	620.	BDL	--	0.02	12.
Topside	620.	0.12[d]	74.	0.02[d]	12.
Insulation	620.	0.31[d]	190.	0.12[d]	74.
Shelf[a]	31.	3.60[d]	110.	0.47[d]	15.
Roof					
Underside[b]	930.	0.03[d]	28.	0.02[d]	19.
Total			142,262		4,465.

Notes:

(a) 5% of floor area.
(b) 150% of floor area.
(c) Estimated data.
(d) Estimated data based on Area 4.
BDL - Below detectable limits.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-7

BUILDING SURFACE METALS

AREA 6

BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	1,360.	1.8	2,400.	0.82	1,100.
Wall	2,800.	0.1[d]	280.	0.01[d]	28.
Shelf[a]	136.	11.	1,500.	5.6	760.
Ceiling					
Underside	1360.	N.D.[e]	--	0.02[e]	27.
Topside	1360.	0.12[e]	160.	0.02[d]	27.
Insulation	1360.	0.31[e]	420.	0.12[e]	160.
Shelf[b]	68.	3.60[e]	240.	0.47[e]	32.
Roof					
Underside[c]	2040.	0.03[e]	61.	0.02[e]	41.
Total			5,061.		2,175.

Notes:

(a) 10% of floor area.
(b) 5% of floor area.
(c) 150% of floor area.
(d) Estimated data.
(e) Estimated data based on Area 4.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-8

BUILDING SURFACE METALS

AREA 7

BEFORE CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor	1,950.	4.5	8,800.	1.2	2,300.
Wall	4,500.	0.1[a]	450.	0.01[a]	45.
Shelf[a]	100.	2.2	220.	4.5	450.
Ceiling					
Underside	1950.	BDL	--	0.001	2.
Topside[b]	1650.	0.71	1,200.	0.06	99.
Insulation[b]	1650.	1.12	1,800.	0.14	230.
Shelf[a]	80.	0.80	64.	0.13	10.
Roof					
Underside[c]	1650.	4.9	8,100.	0.008	13.
Total			20,634.		3,149.

Notes:

(a) 5% of floor area.
(b) Rooms 28 and 40 have plasterboard ceilings.
(c) 150% of floor area.
(d) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-9

BUILDING SURFACE METALS

AREA 8

BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	3,300.	1.7	5,600.	0.21	690.
Wall	7,900.	0.05[b]	400.	0.006[b]	47.
Shelf[a]	165.	1.7[c]	280.	0.21[c]	35.
Second Floor Underside	3,300.	0.1[c]	330.	0.02[c]	66.
Total			6,610.		838.

Notes:

(a) 5% of floor area.
(b) Estimated data based on Area 9.
(c) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-10

BUILDING SURFACE METALS

AREA 9

BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	1,660.	2.7	4,500.	0.61	1000.
Wall	4,500.	0.05	230.	0.006	27.
Shelf[a]	80.	2.7[b]	220.	0.61[b]	49.
Second Floor Underside	1,660.	0.1[b]	170.	0.02[b]	33.
Total			5,120.		1109.

Notes:

(a) 5% of floor area.
(b) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-11

BUILDING SURFACE METALS

AREA 10

BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	14,000.	4.0	56,000.	1.9	27,000.
Wall	16,000.	3.41	55,000.	0.07	1,100.
Shelf[a]	3,000.	7.2	22,000.	0.64	1,900.
Ceiling[b]					
Underside	2,300.	0.1	230.	0.01	23.
Roof					
Underside	14,000.	0.1[c]	1,400.	0.02[c]	280.
Total			134,630.		30,303.

Notes:

(a) 5% of floor area plus interior roof area.
(b) Underside of interior roofs.
(c) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-12

BUILDING SURFACE METALS

AREA 11

BEFORE CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Area 11					
Floor	3,900.	0.38	1,500.	0.30	1,200.
Walls	2,600.	0.05[d]	130.	0.005[d]	13.
Ceiling	3,900.	0.05[d]	200.	0.005[d]	20.
Area 11a[a]	4,600	0.06	280.	0.08	370.
Area 11b[b]	7,100.	0.17	1,200.	0.11	780.
Area 11c[c]	3,700.	1.4	5,200.	2.4	8,900.
Concealed Floor	124.	2.70[d]	330.	0.17[d]	21.
Concealed Walls	9,000.	0.1[d]	900.	0.01[d]	90.
Roof					
Underside	3,800.	0.1[d]	380.	0.02[d]	76.
Total			10,120.		11,470.

Notes:

(a) Supply air plenum.
(b) Return air plenum and Room 56.
(c) Crawl space floor.
(d) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-13

BUILDING SURFACE METALS

AREA 12

BEFORE CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor					
Exposed	9,145.	1.7	16,000.	0.97	8900.
Concealed	135.	2.7[b]	360.	0.17[b]	23.
Walls					
Exposed	14,500.	0.09	1,300.	0.006	87.
Concealed	4,300.	0.1[b]	430.	0.01[b]	43.
Shelf	460.	0.91	420.	0.35	160.
Ceiling					
Underside	9,280.	0.02	190.	0.002	19.
Topside	9,280.	10.1	94,000.	1.1	10,000.
Roof					
Underside	9,280.	0.17	1,600.	0.009	84.
Total			114,300.		19,316.

Notes:

(a) 1% of floor area.
(b) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-14

BUILDING SURFACE METALS

AREA 13

BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	8,000.	5.0	40,000.	17.0	140,000.
Walls	400.	0.1[b]	40.	0.01[b]	4.
Roof Underside[a]	16,000.	0.1[b]	1,600.	0.02[b]	320.
Total		2.0	41,640.	6.7	140,324.

Notes:

(a) 200% of floor area.
(b) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-15

BUILDING SURFACE METALS

AREA 14

BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	980.	3.1	3,000.	9.3	9,100.
Walls	1,400.	0.1[b]	140.	0.01[b]	14.
Shelf	490.[a]	3.1	1,500.	9.3	4,600.
First Floor Underside	980.	0.1[b]	98.	0.02[b]	20.
Total			4,738.		13,734.

Notes:

(a) 50% of floor area.
(b) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE A-16

BUILDING SURFACE METALS

AREA 15

BEFORE CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	570.	5.5	3,100.	2.6	1,500.
Walls	1,400.	0.1[a]	140.	0.01[a]	14.
Roof					
Underside	570.	0.1[a]	57.	0.02[a]	11.
Total			3,297.		1,525.

Notes:

(a) Estimated data.

APPENDIX B

BUILDING SURFACE METAL CALCULATIONS
AFTER CLEANING

DURACELL INC.
NORTH TARRYTOWN, NEW YORK

TABLE B-1

BUILDING SURFACE METALS
AFTER CLEANING

Area	Lead	Mercury
1	5,200.	850.
2	2,600.	530.
3	27,000.	10,000.
4	1.	71.
5	960.	210.
6	2,100.	840.
7	12,000.	1,500.
8	1,300.	480.
9	620.	240.
10	69,000.	3,800.
11	10,000.	11,000.
12	99,000.	11,000.
13	2,400.	1,100.
14	390.	200.
15	250.	80.
Total	232,821.	41,901.

Note:

Units are mg.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-2

BUILDING SURFACE METALS

AREA 1

AFTER CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor	2,500.	0.1	250.	0.1	250.
Walls	10,300.	0.04	410.	0.0003	3.
Shelf[a]	25.	0.78	20.	1.2	30.
Ceiling					
Underside	2,500.	0.03	75.	0.001	3.
Topside[b]	2,200.	1.04	2,300.	0.10	220.
Room 4	300.	2.59	780.	0.65	200.
Insulation[b]	2,200.	0.43	950.	0.05	110.
Roof					
Underside[c]	3,750.	0.11	410.	0.01	38.
Total			5,195.		854.

Note:

(a) 1% of floor area.
(b) All rooms except Room 4 have insulation above plasterboard ceiling.
(c) 150% of floor area.

DURACELL INC.
NORTH TARRYTOWN, NEW YORK

TABLE B-3

BUILDING SURFACE METALS
AREA 2
AFTER CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor					
Exposed	2,600.	0.1	260.	0.1	260.
Concealed	200.	2.70	540.	0.17	34.
Walls					
Exposed	12,400.	0.04[c]	500.	0.0003[c]	4.
Concealed	5,800.	0.1	580.	0.01	58.
Shelf[a]	28.	1.2	34.	0.56	16.
Ceiling[b]					
Underside	230.	0.03[c]	7.	0.001[c]	0.
Topside	230.	2.59[c]	600.	0.65[c]	150.
Second Floor					
Underside					
Exposed	2570.	0.03[c]	77.	0.001[c]	3.
Concealed	230.	0.11[c]	25.	0.01[c]	2.
Total			2,623.		527.

Notes:
(a) 1% of total floor area.
(b) Rooms 21 (partial) and 22 have plasterboard ceilings.
(c) Estimated data based on Area 1.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-4

BUILDING SURFACE METALS

AREA 3

AFTER CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor	16,000.	0.1	1,600.	0.1	1,600.
Wall	21,500.	0.10[e]	2,200.	0.01[e]	220.
Shelf[a]	320.	2.2	700.	3.7	1,200.
Ceiling					
Underside	16,000.	0.24	3,800	0.03	480.
Topside[b]	6,000.	2.10	13,000	0.37	2,200.
Insulation[b]	6,000.	0.45	2,700.	0.68	4,100.
Shelf[c]	300.	4.76	1,400.	0.37	110.
Roof					
Underside[d]	9,000.	0.16	1,400.	0.02	180.
Total			26,800.		10,090.

Notes:

(a) 2% of floor area.
(b) East part has plasterboard ceiling with insulation above.
(c) 5% of ceiling area.
(d) 150% of ceiling area.
(e) Average value.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-5

BUILDING SURFACE METALS

AREA 4

AFTER CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor	750.	BDL	--	0.03	23.
Wall	1,800.	BDL	--	0.003	5.
Ceiling					
Shelf	37.5	0.03	1.	0.25	9.4
Roof					
Underside[b]	1,125.	BDL	--	0.03	34.
Total			1.		71.

Notes:

(a) 5% of floor area.
(b) 150% of floor area.
(c) Estimated data.
BDL - Below detectable limits.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-6

BUILDING SURFACE METALS

AREA 5

AFTER CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	620.	0.1	62.	0.1	62.
Wall	1,600.	0.1[d]	160.	0.01[d]	16.
Shelf[f]	6.	56.	340.	.56	3.
Ceiling					
Underside	620.	N.D.[e]	--	0.02[e]	12.
Topside	620.	0.12[e]	74.	0.02[e]	12.
Insulation	620.	0.31[e]	190.	0.12[e]	74.
Shelf[b]	31.	3.60[e]	110.	0.47[e]	15.
Roof					
Underside[c]	930.	0.03[e]	28.	0.02[e]	19.
Total			964.		213.

Notes:

(a) 5% of floor area.
(b) 150% of floor area.
(c) Estimated data.
(d) Estimated data based on Area 4.
(f) 1% of floor area.
BDL - Below detectable limits.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-7

BUILDING SURFACE METALS

AREA 6

AFTER CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	1,360.	0.1	140.	0.1	140.
Wall	2,800.	0.1[d]	280.	0.01[d]	28.
Shelf[a]	136.	5.5	750.	2.8	380.
Ceiling					
Underside	1360.	N.D.[e]	--	0.02[e]	27.
Topside	1360.	0.12[e]	160.	0.02[e]	27.
Insulation	1360.	0.31[e]	420.	0.12[e]	160.
Shelf[b]	68.	3.60[e]	240.	0.47[e]	32.
Roof					
Underside[c]	2040.	0.03[e]	61.	0.02[e]	41.
Total			2,051.		835.

Notes:

(a) 10% of floor area and assumes 50% contamination reduction.
(b) 5% of floor area.
(c) 150% of floor area.
(d) Estimated data.
(e) Estimated data based on Area 4.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-8

BUILDING SURFACE METALS

AREA 7

AFTER CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor	1,950.	0.1	200.	0.1	200.
Wall	4,500.	0.1[a]	450.	0.01[a]	45.
Shelf[d]	20.	2.2	44.	4.5	900.
Ceiling					
Underside	1950.	BDL	--	0.001	2.
Topside[b]	1650.	0.71	1,200.	0.06	99.
Insulation[b]	1650.	1.12	1,800.	0.14	230.
Shelf[a]	80.	0.80	64.	0.13	10.
Roof					
Underside[c]	1650.	4.9	8,100.	0.008	13.
Total			11,858.		1,499.

Notes:

(a) 5% of floor area.
(b) Rooms 28 and 40 have plasterboard ceilings.
(c) 150% of floor area.
(d) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-9

BUILDING SURFACE METALS

AREA 8

AFTER CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	3,300.	0.1	330.	0.1	330.
Wall	7,900.	0.05[b]	400.	0.006[b]	47.
Shelf[a]	165.	1.7[c]	280.	0.21[c]	35.
Second Floor Underside	3,300.	0.1[c]	330.	0.02[c]	66.
Total		0.52	1,340.	0.08	478.

Notes:

(a) 5% of floor area.
(b) Estimated data based on Area 9.
(c) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-10

BUILDING SURFACE METALS

AREA 9

AFTER CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor	1,660.	0.1	170.	0.1	170.
Wall	4,500.	0.05	230.	0.006	27.
Shelf[a]	17.	2.7[b]	46.	0.61[b]	10.
Second Floor Underside	1,660.	0.1[b]	170.	0.02[b]	33.
Total			616.		240.

Notes:

(a) 1% of floor area.
(b) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-11

BUILDING SURFACE METALS

AREA 10

AFTER CLEANING

Surface	Area (Square Feet)	Lead		Mercury	
		Concentration (mg/SF)	Quantity (mg)	Concentration (mg/SF)	Quantity (mg)
Floor	14,000.	0.1	1,400.	0.1	1,400.
Wall	16,000.	3.41	55,000.	0.07	1,100.
Shelf[(a)]	3,000.	3.6	11,000.	0.32	960.
Ceiling[(b)]					
Underside	2,300.	0.1	230.	0.01	23.
Roof					
Underside	14,000.	0.1[(c)]	1,400.	0.02[(c)]	280.
Total			69,030.		3,763.

Notes:

(a) 5% of floor area plus interior roof area assuming 50% of concentration reduction..
(b) Underside of interior roofs.
(c) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-12

BUILDING SURFACE METALS

AREA 11

AFTER CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Area 11					
Floor	3,900.	0.38	1,500.	0.30	1,200.
Walls	2,600.	0.05[d]	130.	0.005[d]	13.
Ceiling	3,900.	0.05[d]	200.	0.005[d]	20.
Area 11a[a]	4,600	0.06	280.	0.08	370.
Area 11b[b]	7,100.	0.17	1,200.	0.11	780.
Area 11c[c]	3,700.	1.4	5,200.	2.4	8,900.
Concealed Floor	124.	2.70[d]	330.	0.17[d]	21.
Concealed Walls	9,000.	0.1[d]	900.	0.01[d]	90.
Roof					
Underside	3,800.	0.1[d]	380.	0.02[d]	76.
Total			10,120.		11,470.

Notes:

(a) Supply air plenum.
(b) Return air plenum and Room 56.
(c) Crawl space floor.
(d) Estimated data.

DURACELL INC.
NORTH TARRYTOWN, NEW YORK

TABLE B-13

BUILDING SURFACE METALS
AREA 12
AFTER CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor					
Exposed	9,145.	0.1	910.	0.1	910.
Concealed	135.	2.7[b]	360.	0.17[b]	23.
Walls					
Exposed	14,500.	0.09	1,300.	0.006	87.
Concealed	4,300.	0.1[b]	430.	0.01[b]	43.
Shelf	91.	0.91	83.	0.35	32.
Ceiling					
Underside	9,280.	0.02	190.	0.002	19.
Topside	9,280.	10.1	94,000.	1.1	10,000.
Roof					
Underside	9,280.	0.17	1,600.	0.009	84.
Total			98,873.		11,198.

Notes:

(a) 1% of floor area.
(b) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-14

BUILDING SURFACE METALS

AREA 13

AFTER CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	8,000.	0.1	800.	0.1	800.
Walls	400.	0.1[b]	40.	0.01[b]	4.
Roof Underside[a]	16,000.	0.1[b]	1,600.	0.02[b]	320.
Total			2,440.		1,124.

Notes:

(a) 200% of floor area.
(b) Estimated data.

DURACELL INC.

NORTH TARRYTOWN, NEW YORK

TABLE B-15

BUILDING SURFACE METALS

AREA 14

AFTER CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	980.	0.1	98.	0.1	98.
Walls	1,400.	0.1	140.	0.02 (b)	28.
Shelf	490. (a)	0.1	49.	0.1	49.
First Floor Underside	980.	0.1	98.	0.02 (b)	20.
Total			385.		195.

Notes:

(a) 50% of floor area.
(b) Estimated data.

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TABLE B-16

BUILDING SURFACE METALS

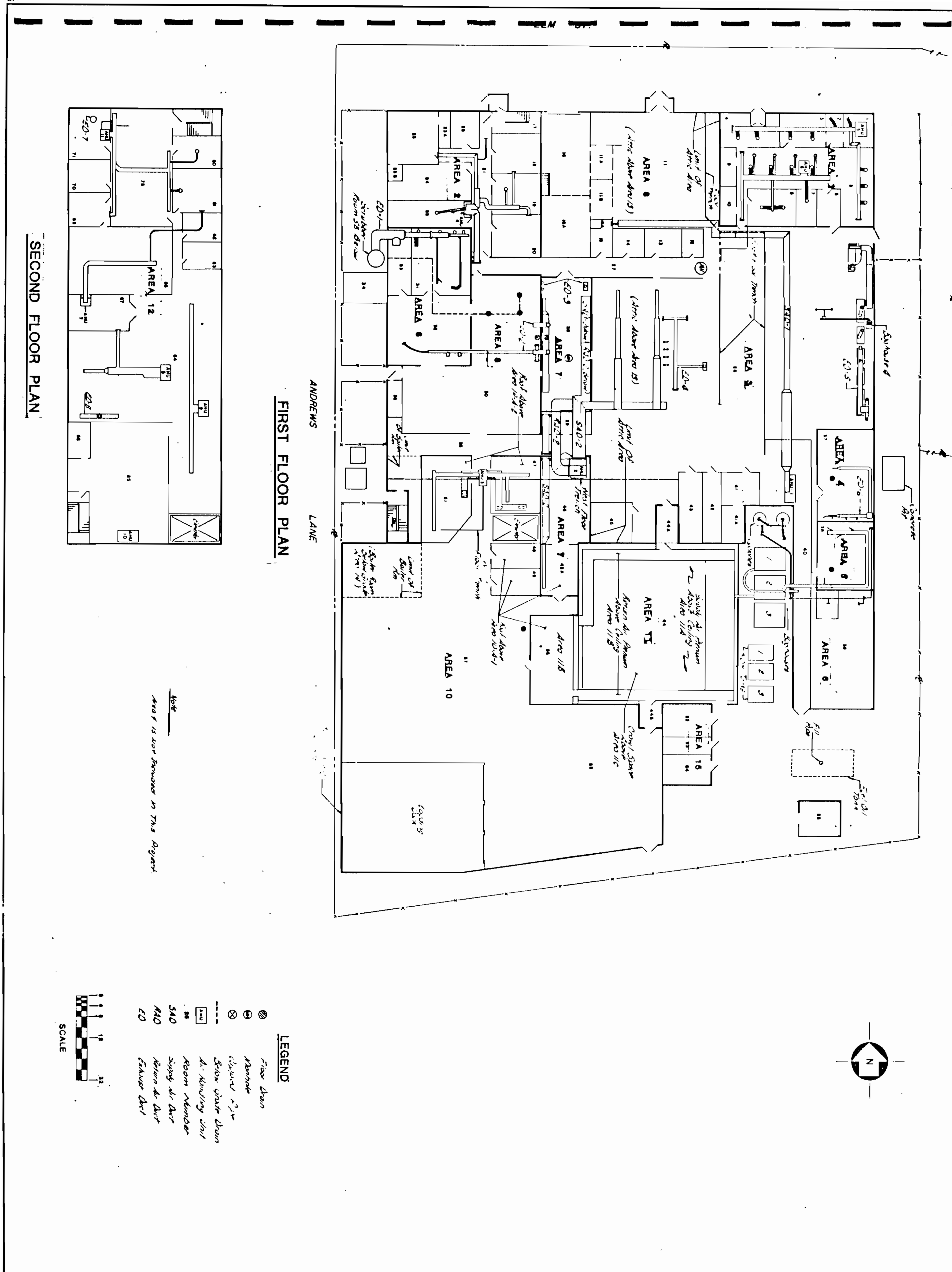
AREA 15

AFTER CLEANING

Surface	Area (Square Feet)	Lead Concentration (mg/SF)	Lead Quantity (mg)	Mercury Concentration (mg/SF)	Mercury Quantity (mg)
Floor	570.	0.1	57.	0.1	5.7
Walls	1,400.	0.1[(a)]	140.	0.02[(a)]	14.
Roof					
Underside	570.	0.1[(a)]	57.	0.02[(a)]	11.
Total			254.		82.

Notes:

(a) Estimated data.
(b) Average data.
(c) Quantity/Total of and average data.



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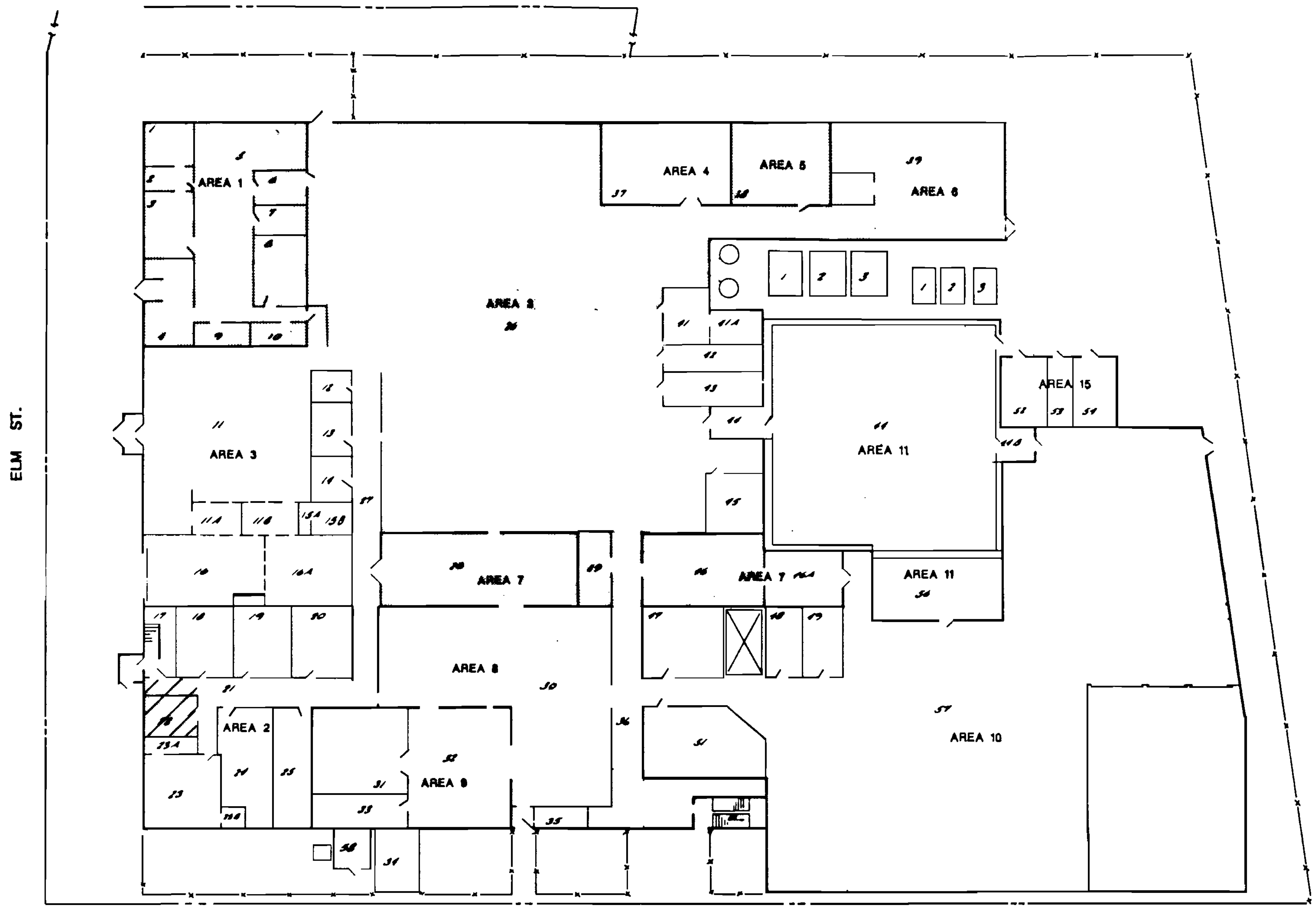
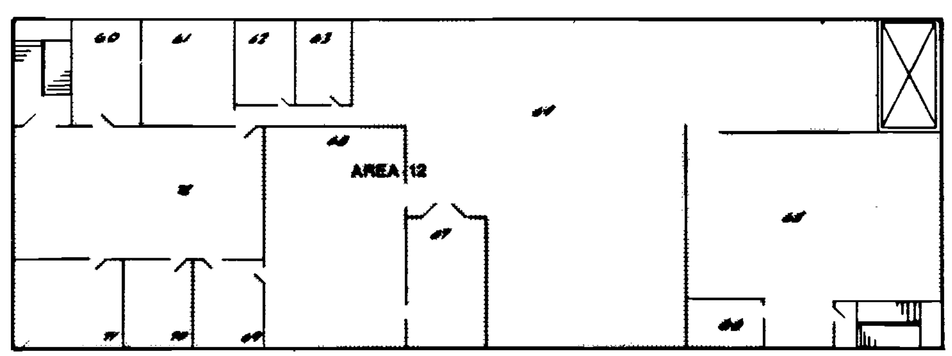
PROJECT: BUILDING DEMOLITION, DURACELL INCORPORATED, NORTH TARRYTOWN, NEW YORK

TITLE: BUILDING PLAN

DWG NO: 1



FIRST FLOOR PLAN



SECOND FLOOR PLAN

LEGEND

FIXED CEILINGS

32 ROOM NUMBERS

0 8 16 32
SCALE

Nº	REVISIONS	DATE	BY

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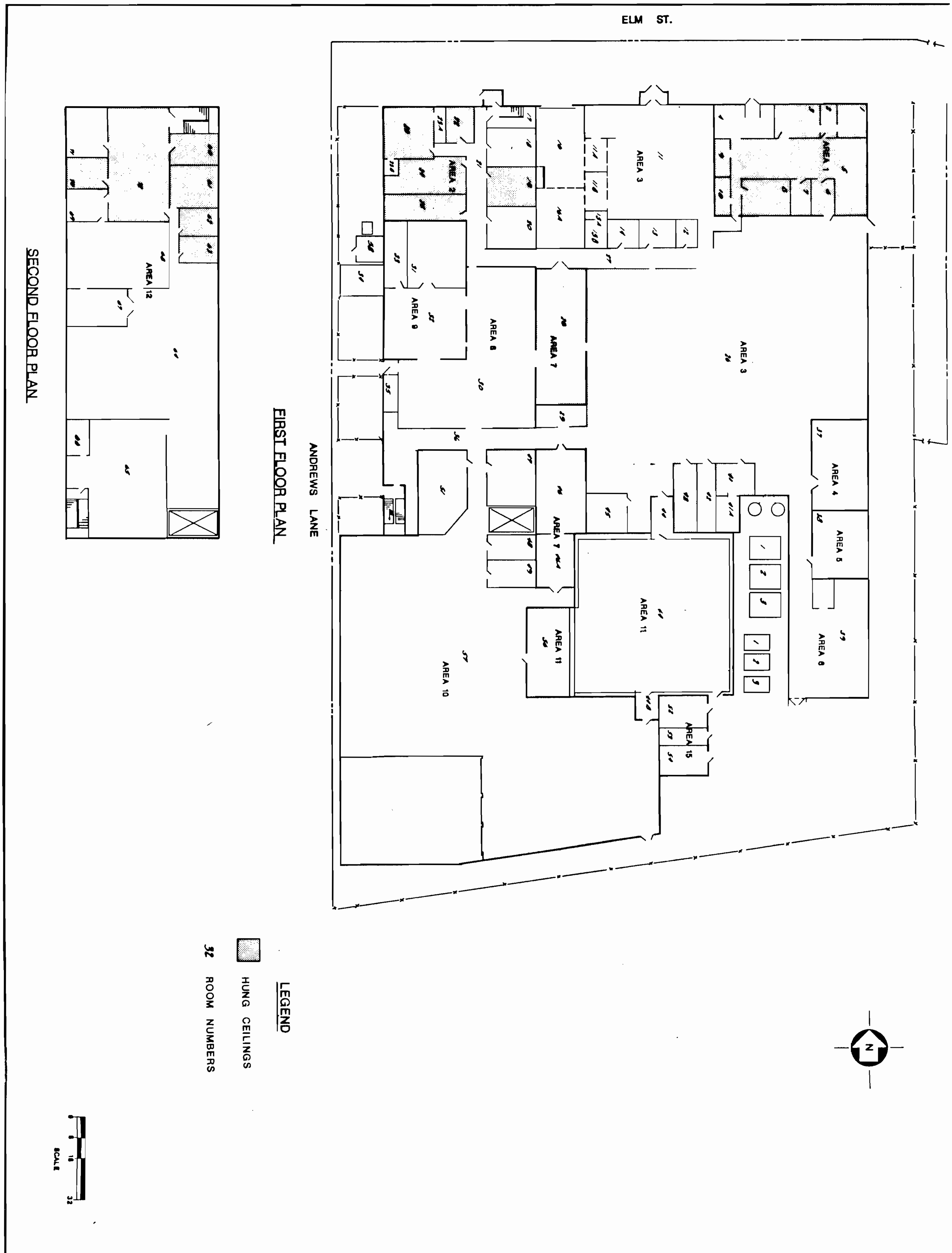
PROJECT
BUILDING DEMOLITION
DURACELL INCORPORATED
NORTH TARRYTOWN, NEW YORK

TITLE
FIXED CEILINGS

eder associates consulting engineers, p.c.
85 FOREST AVENUE, LOCUST VALLEY, NEW YORK, 11560

DRAWN BY JLP	SCALE 1/8" = 1/8"
DESIGNED BY	PROJECT Nº
APPROVED BY	DWG. Nº 2
DATE	



BUILDING DEMOLITION

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NORTH TARRYTOWN, NEW YORK

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PROJECT: BUILDING DEMOLITION, DURACELL INCORPORATED, NORTH TARRYTOWN, NEW YORK

TITLE: HUNG CEILINGS

eder associates consulting engineers, p.c.

DRAWN BY | DESIGNED BY | APPROVED BY | DATE | SCALE | PROJECT NO | DWG NO 3