# SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

# RESPONSIVENESS SUMMARY

# RESOURCE CONSERVATION AND RECOVERY ACT PERMIT

# JOHNSON CONTROLS FLORENCE RECYCLING CENTER

# SCR 000 771 451

# SUMMARY

The proposed Johnson Controls Florence Recycling Center (JCI) is a lead-acid battery recycling facility to be located in Florence, South Carolina. Spent lead-acid batteries will be stored, separated into its component parts and processed into re-usable products, such as, polypropylene pellets, sodium sulfate crystals and lead ingots. On December 21, 2009 JCI submitted a permit application for the storage of spent lead-acid batteries at the Florence facility. The permit application was reviewed by the South Carolina Department of Health and Environmental Control (Department) and subsequently determined to be complete on June 29, 2010.

The Department drafted a permit that included conditions governing the operation of the lead-acid battery warehouse at the JCI facility. The public was notified of the availability of the draft permit and supporting information on July 26, 2010. The notice to the public initiated a public review and comment period. On August 31, 2010, a public meeting and formal public hearing were held by the Department at Francis Marion University in Florence, SC. The public comment period came to a close on September 24, 2010. All comments received during the public comment period are addressed in the following responsiveness summary. After consideration of all submitted comments, a final decision was made to issue the permit to JCI on October 14, 2010, with no changes made to the draft permit.

SOUTH CAROLINA DEPARTMENT OF HEALTH
AND ENVIRONMENTAL CONTROL
RESPONSE TO COMMENTS ON THE DRAFT RCRA PERMIT

Comments on the draft RCRA permit are reflected below and followed by a response from the Department. The response will identify the change, if any, to the permit as a result of the comment. Although South Carolina law limits comments to those properly provided and addressing the application of RCRA to the proposed RCRA unit, the Department, without waiving objections to scope, responds to all comments as follows.

**Comments from Leath, Bouch and Seekings LLP, letter dated September 24, 2010**

In general, comments from Leath, Bouch and Seekings state the draft RCRA permit for JCI does not meet the intent of R.61-79 as particular issues are identified and discussed in more detail in their concerns. The proposed JCI facility will receive unmanifested batteries that will be placed into a storage warehouse and then be recycled. The Department's position is, based on R.61-79.266.80, this facility needs a RCRA Storage Permit for the warehouse portion of the facility and once the batteries are taken into the recycling process is no longer subject to a RCRA permit. The entire facility would still be subject to applicable standards of R.61-79.262. Therefore, the Department feels that the draft permit is appropriate, consistent with R.61-79, and protective of human health and the environment.

Comments will be paraphrased and/or shortened for purposes of clarity in the response. Full text of the comments will be attached to the end of the document.

COMMENT 1:
I.A. The Draft Permit Lacks Sufficient Detail and Controls

Much of the permit simply cross-references existing regulations that were not designed to address specifically the hazards posed by the reclamation of spent lead-acid batteries, or it incorporates provisions of the draft permit application submitted by JCI.

**The permit references the applicable regulations for the proper management of hazardous waste storage in containers having the waste codes listed in Module III. All other management is outside the scope of the permit as indicated by the non-inclusion of further permitting requirements in R.61-79.266.80. The referenced sections of the permit application were reviewed by the Department for compliance with all requirements of the regulations prior to inclusion in the permit. In addition, the Part B application is incorporated as part of the final permit.**

The draft permit does not reflect controls and requirements incorporated into RCRA permits for secondary lead smelters in other states.

**The only RCRA activities at the proposed JCI facility requiring a permit are for container storage. R.61-79.266.80 only requires a permit for those reclamation facilities that store batteries onsite prior to recycling. This is supported by the regulations in R.61-79.266.80**

**that imposes no RCRA permitting requirements on reclamation facilities that store batteries prior to recycling beyond permitted storage of the batteries onsite.**

The facilities cannot operate without a hazardous waste containment building, as battery components typically must be staged before insertion into the reclamation process.

**The proposed JCI facility will not require the use of a containment building due to the nature of the recycling operations there. The spent batteries will be kept intact while in the permitted warehouse and batteries that begin leaking will be transferred to sealed containers. The batteries will remain intact until such time as they are introduced into the CX breaker. Batteries that are handled at the CX breaker are involved in a continuous direct recycling process, will be under the continuous management of facility personnel, and will be returned to the permitted warehouse in the event of a process stoppage as described in the application. Batteries are not stored in the Charge Preparation Area and materials located there remain within a continuous direct recycling process.**

COMMENT 2:

I.B. The Draft Permit Lacks Detail and Controls on Secondary Containment for Spent Lead Acid Battery Management at the Facility

The draft permit and permit application do not contain final design details or drawings of the permitted unit.

**The draft permit specifies that the container storage area must be built to comply with the requirements of R.61-79.264.175. The Department will review and comment as necessary for approval of the final design for compliance with the regulation. In addition, any design that does not meet that requirement would be, upon construction, immediately subject to inspection and would be referred for enforcement action as a violation of the permit and State regulations.**

COMMENT 3:

I.C. DHEC Should require State of the Art Controls, Particularly the Use of Containment Buildings

DHEC should require the use of a containment building for the permitted unit, instead of container storage.

**The use of R.61-79.264.175 for permitted storage at the facility is appropriate for the type of materials to be stored. The only materials that will be received at the facility and stored as hazardous waste in the permitted storage area will be intact batteries and any batteries that begin to leak while in storage will be immediately placed into sealed containers. Other materials that may be placed in the permitted storage area (e.g. lead scrap, unfilled reject batteries and unused battery parts) are not considered to be wastes. The container storage regulations provide for secondary containment that is appropriate for the material to be stored there and the facility will provide tertiary containment in the form of a HDPE liner underneath the warehouse building. Requiring a containment building would provide no appreciable increase in protection to the environment. Fugitive dust emissions are**

**addressed as part of the Air Permit for the entire Facility and not within the scope of the RCRA Permit.**

COMMENT4:

I.C DHEC Must require Groundwater Monitoring for Areas that Generate Free Liquids
The processing areas of the facility should require a permit.

**The processing areas of the facility are exempted from RCRA permit requirements due to the recycling exemption. This is supported by the regulations in R.61-79.266.80 that imposes no RCRA permitting requirements on reclamation facilities that store batteries prior to recycling beyond permitted storage for the batteries onsite.**

COMMENT 5:

I.D. Additional Detail and Controls are Required for Wastewater and Storm Water Management
Treatment and discharge of storm water is unclear.

**Wastewater and Storm Water management are outside the scope of the RCRA permit and both of these areas are addressed by other permitting programs. However, the Department provides the following information in response to this comment.**

**The first 0.5 inches of storm water will be collected from the site and treated for discharge to the Florence POTW. Alternately, treated storm water may be transferred to a tank that is used as industrial water in the recycling process. Any industrial wastewater will be discharged through the Florence POTW. Collected storm water (beyond the first 0.5 inches of storm water) will be managed onsite. All appropriate storm water and wastewater treatment permits are issued by the Department's Bureau of Water.**

COMMENT 6:

I. E. More Information is needed regarding Raw Materials and Products at the Facility
Ebonite case materials, ferrous scrap metal

**Ebonite, or hard rubber, was used for some battery casings up until the past 20 or 30 years. It is anticipated that some batteries with ebonite casings or metal casings, as well as some batteries otherwise incompatible with the Florence Recycling Center processes, may be received at the facility. Batteries are hand-sorted for entry into the breaker process by technicians trained to recognize incompatible batteries. Such batteries will be set aside and sent off-site to an appropriate facility. Receipt of incompatible batteries is expected to be minimal because the batteries received at the facility will originate from JCI distribution centers or JCI customers.**

**The vast majority of the plastic from the recycling of batteries is recovered and used in the production of polypropylene pellets. A minor portion of plastic can be introduced into the smelting operation as a raw material for the recovery of lead, as provided for in R.61-79.266, Appendix XI. Anthracite is a carbon-based raw material introduced into the smelting process as a reducing agent. Plastic is also a carbon-based material introduced into the smelting process and substitutes for the Anthracite as a reducing agent.**

Sodium sulfate is identified as a raw material.

**Sodium sulfide is listed as raw material and due to its strongly alkaline nature would need to be managed in a safe manner prior to use at the facility. Since it is a raw material and not a waste, it is not regulated by the Department for the purposes of this permit.**

COMMENT 7:
II. DHEC Must Incorporate the CX Area Into the RCRA Permit
The CX area should be considered to be a permitted storage area due to the staging of batteries.

**Pallets of batteries will be staged adjacent to the CX breaker for the purpose of facilitating the introduction of batteries into the recycling process. These batteries must remain under the continuous management and supervision of facility personnel while in the CX area. All batteries must be returned to the permitted warehouse in the event of a process stoppage or equipment failure as described in the application. No batteries may remain in the CX area while unattended. Thus, no storage of batteries occurs in CX area and no permit is required under RCRA.**

COMMENT 8:
III. DHEC Must Incorporate the Charge Preparation Area Into the RCRA Permit
The facility will receive and store lead scrap prior to introduction into the feed hopper.

**Scrap metal due to be recycled is exempted from a hazardous waste determination under R.61-79.261.4(a)(13). The lead scrap being received by the facility is additionally excluded as a hazardous waste due to the exemption in R.61-79.266.100 and R.61-79.266 Appendix XI. Beyond R.61-79.266.80, other provisions of RCRA could be referenced as independent exemptions for materials directly involved in the recycling process, including but not limited to provisions of R.61-79.261.2, 261.3, 261.4 and 261.6.**

COMMENT 9:
IV. Draft Permit Section I.A., Effect of the Permit
This section of the draft permit omits references to applicable regulations.

**The referenced sections would still apply to the facility as applicable, regardless of inclusion or exclusion from the issued permit. As stated in the comment, these sections are self-implementing and the facility would be responsible for ensuring compliance with any new applicable requirements that are not specifically included in the permit. [R.61-79.270.4]**

The permit does not constitute a defense to any action brought under imminent and substantial endangerment to human health or the environment.

**The permit does not constitute a defense as stated in Permit Condition I.A.**

DHEC's issuance of this permit does not prevent DHEC from adopting or amending regulations

that impose additional or more stringent requirements that those in existence at the time the permit is issued, and does not prevent DHEC from the enforcement of these provisions against JCI.

**The Department agrees that the issuance of this permit does not prevent it from adopting or amending regulations. The permit as written has appropriate controls in place for the facility and is in compliance with Department regulations.**

Failure to submit or maintain any information required in connection with this permit, or falsification and/or misrepresentation of any submitted information, is grounds for revocation of the permit.

**Permit Condition I.E.7 requires the facility to submit any relevant information requested by the Department. Failure to comply would result in enforcement action that could result in penalties up to or including revocation of the permit.**

In case of conflicts between permit application provisions, operating plans and/or standard operating procedures, the permit conditions take precedence.

**The Department agrees with this statement.**

**Comment from Steve Vandenberg, submitted at the August 30, 2010 Public Hearing**

My name is Steve Vandenberg. I live in this community. I work in this community, and one of the things that we represent in our daily activities is the attempt to work with companies that really do know what they're doing, and really do have a good, strong idea as to what it takes to build a community. I firmly believe that Johnson Controls is one of those companies. I've worked with them for several years, and feel quite comfortable with the fact that Johnson Controls is quite capable of keeping our community very safe. Hazardous waste is obviously not something anyone wants to mess with. Nobody wants to take a chance. Specifically in our community, as I live just down the road, I don't want anybody taking chances with that. It's highly regulated, it's highly controlled, and they must do everything exactly right in order to make sure they maintain their own business. They aren't going to put their business in jeopardy.

In working with Johnson Controls, I've come to understand that they go above and beyond whatever is necessary in order to make sure that they keep the environment safe, they keep their workers safe, and they keep their community safe. They want to be here for a long time just like the rest of us do. I would absolutely encourage the permitting of this particular facility, not only for the welfare of Johnson Controls, but also for the people in this community that need a company such as Johnson Controls here. Thank you.

**The Department acknowledges the comment and appreciates the participation in the public process.**

**Comment from Dale Doty, submitted at the August 30, 2010 Public Hearing**

My name is Dale Doty. I live on the west side of Florence, and I'm here just because I believe that the kinds of manufacturing jobs and opportunities this plant is going to offer our community are those kind of jobs and opportunities our community needs. I think we need to be doing those things we can to encourage progressive manufacturers and operations to locate in our community. As Mr. Vandenberg said, these are folks that have been doing this, and know how to do this. They have put a plan together that will do this as safely as possible. I believe the State of South Carolina does have the ability and the understanding necessary to monitor this, to make sure that those safety considerations are made and continue to be made for as long as this plant is in South Carolina. I want to encourage everybody that has a concern about this to make their concerns known, no matter what they are, because I believe the State is interested in listening to the things we have to say. This is good for the community as far as I'm concerned, and I hope that Johnson Controls remains in the community for a long term, and continues to do this and other things in the Florence area.

**The Department acknowledges the comment and appreciates the participation in the public process.**

**Comment by Jack Roach, submitted at the August 30, 2010 Public Hearing**

My name is Jack Roach. I live about 3 miles from here south, almost due west of where this proposed facility is going to be built. I know Johnson Controls from their industry record. I spent personally 29 years in the automotive chain supply industry. I know of Johnson Controls' professional reputation as well as their respect and their reputation in the industry as being a quality company that has very good concerns for the communities that they work in. I would support this facility as well. I think we need the jobs in the Florence community that they'll bring. I think we'd be doing a disservice to our fellow citizens in the region if we don't allow this project to go forward. Thank you.

**The Department acknowledges the comment and appreciates the participation in the public process.**

**Comment by Glynn Willis, Florence City Planning Commission, e-mail dated September 7, 2010**

Since announcing plans for the Florence recycling Center last summer, Johnson Controls has coordinated a thorough and collaborative process involving local and national environmental groups including the Coastal Conservation League and the League of Women Voters, area elected officials and members of the local community, including myself. As a member of the citizen's advisory group that met with officials of Johnson Controls on a regular basis, it is clear that Johnson Controls is one of South Carolina's leading corporate citizens and is committed to the Florence Community.

Johnson Controls has a long history of environmental responsibility both nationally and here in South Carolina. With this proposed recycling facility, Johnson Controls will now be manufacturing, distributing and recycling batteries in SC, minimizing environmental impact and

maximizing the economic development impact in the community and this region of South Carolina.

The proposed facility is also critical to economic development in Florence County. This state-of-the-art new battery recycling facility represents a capital investment of more than $150 million and more than 250 new, local jobs and it will support an additional 1,000 indirect jobs through the businesses their employees will support, and other companies that will provide raw materials to the recycling center.

I am writing in support of the Johnson Controls recycling facility and the RCRA permit as I strongly believe in Johnson Controls growing its presence in this region of out great state.

**The Department acknowledges the comment and appreciates the participation in the public process.**

September 24, 2010

Via E-Mail **haynesra@dhec.sc.gov**

Via U.S. Mail
Mr. Richard Haynes
South Carolina Department of Health and
Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Re: Draft Hazardous Waste Permit Facility ID#SCR 000 771 451 for
Johnson Controls, Inc. Florence Recycling Center

Dear Mr. Haynes:

We submit these comments regarding the draft hazardous waste permit for the proposed Johnson Controls, Inc. (JCI) lead-acid battery plant to be constructed in Florence, South Carolina. As with the draft air permit that the South Carolina Department of Health and Environmental Control (DHEC or the Department) issued earlier this year for this facility, we are concerned that this draft hazardous waste permit is deficient and will not adequately protect human health or the environment. Our principal concerns are addressed below.

## I. The Draft Permit Will Not Ensure Protection of Human Health and the Environment

### A. The Draft Permit Lacks Sufficient Detail and Controls

The draft RCRA permit is inadequate and will not ensure that the public and environment are adequately protected from the reclamation of lead-acid batteries at this location. As discussed in more detail below, the draft permit fails to impose a set of rigid controls on the JCI facility, lacks sufficient detail to ensure compliance, and will not ensure that the facility is

managed in a manner consistent with the intent of RCRA and South Carolina's implementing regulations. Much of the permit simply cross-references existing regulations that were not designed to address specifically the hazards posed by the reclamation of spent lead-acid batteries, or it incorporates provisions of the draft permit application submitted by JCI. We believe that the draft permit thus is not tailored sufficiently to the hazards that will be posed by this facility and urge DHEC to revise the draft permit to address the issues raised below.

The draft permit does not reflect controls and requirements incorporated into RCRA permits for secondary lead smelters in other states. The core requirements of the draft JCI permit span a mere 20 pages, and much of that section simply cross-references existing regulations. When one compares this draft permit to those issued by other state environmental agencies for secondary lead smelters it is obvious that the draft JCI permit warrants additional detail, controls, and enforceable requirements. We urge DHEC to review other permits issued by state environmental agencies for secondary lead smelters. This review should demonstrate that much more is needed in the permit to ensure compliance and protection of human health and the environment. These existing permits incorporate the experience that these state agencies have gained through regulating existing secondary lead smelters and are an excellent guidepost for DHEC to follow in issuing this permit.

Another example of a lack of specificity -- if not the complete suspension of reality -- appears on page 38 of the permit application submitted by JCI. On that page, JCI states that "RCRA-permitted activities at the facility will be limited to storage in containers. No other

hazardous waste management units are anticipated." At most, if not all, existing lead acid battery recycling facilities a hazardous waste containment building is part of the RCRA permit. The facilities cannot operate without a hazardous waste containment building, as battery components typically must be staged before insertion into the reclamation process. This facility application states no such unit is anticipated. We are unable to determine from the application how this facility can operate without a staging area that, like other secondary lead smelters, is subject to RCRA hazardous waste permitting. Again, additional detail from JCI and DHEC is required to answer this issue.

**B. The Draft Permit Lacks Detail and Controls on Secondary Containment for Spent Lead Acid Battery Management at the Facility**

One of the most troubling aspects of the draft permit is that in it DHEC authorizes activities without imposing any controls on those regulated activities. In certain instances, it appears that DHEC may be "buying a pig in a poke," and authorizing activities for which JCI has submitted no final or otherwise approved plans or details in the permit application. The most apparent example of this approach is in the draft permit's lack of adequate secondary containment requirements.

Much of the historical environmental damage caused by the mismanagement of lead acid batteries is due to the release of acids from batteries. A critical aspect -- if not the most paramount aspect -- of spent lead acid battery reclamation is the control of leakage of sulfuric acid from batteries. Leakage from batteries is common at secondary lead smelting facilities. JCI acknowledges in its permit application that damaged batteries are certain to be delivered to the

facility.[1] The permit thus must ensure that the areas subject to the permit requirements are provided with appropriate secondary containment.

Surprisingly, however, the draft permit simply provides a one-sentence condition stating that "The permittee shall construct and maintain the containment system in accordance with R.61-79.264.175 and Section D of the approved Permit application."[2] But "Section D of the approved Permit application" does not provide final design requirements for secondary containment. Instead, it provides a narrative description of the system and promises that "the final, detailed design for the permitted Battery Warehouse will take into account site□specific foundation and loading conditions as described in Determination of Compliance with Location Standards. . . Upon completion, the design will be provided to SC DHEC."[3]

DHEC should not base what is arguably the most critical component of this draft permit on a system for which final design requirements have not yet been reviewed and approved by the Department. What is described by JCI in its permit application is, by its own admission, a concept only. In the permit application, Attachment 5 (Conceptual Design Details) and Attachment 6 (Certified Containment Area Calculation) are blank, to be filled in later by JCI. It would be irresponsible for DHEC to issue a draft permit with no final details on the design, construction and operation of the facility's secondary containment system.

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1 Draft JCI Permit Application at p. D-1.

2 Section III.F. of the draft permit.

3 Draft JCI Permit Application at p. D-4.

Although the narrative, conceptual description provided by JCI in its permit application appears to be sufficient, we nonetheless believe that DHEC should not issue the permit until the final detailed design is submitted by JCI and deemed adequate by DHEC. There is often a great deal of difference between the conceptual design of a structure or system and how it is actually installed and operated. DHEC thus should act prudently and require that JCI submit the final design standards prior to issuing the permit and that DHEC review these standards to ensure that the design provides for adequate secondary containment.

### C. DHEC Should Require State of the Art Controls, Particularly the Use of Containment Buildings

This is the first new secondary lead smelting facility to be constructed on a greenfield site in at least two decades. DHEC thus has the opportunity – if not the mandate – to ensure that the facility is constructed and operated in a manner that achieves state of the art controls for hazardous waste management at secondary lead smelters. Regrettably, the draft permit fails to do so.

An example of such controls is the use of containment buildings for the storage of lead acid batteries and related scrap prior to insertion into the smelting operation. Indeed, EPA created the containment building standards (40 C.F.R. Part 264 Subpart DD) after extensive consultation with the secondary lead industry.[4] EPA promulgated the requirements for these units specifically for application to and use by secondary lead smelting facilities, although the

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4 57 Fed. Reg. 37265 (Aug. 18, 1992).

use of containment buildings is not limited to these smelting facilities. We believe DHEC should revise the draft permit to call for the use of these facilities.

We recommend below permit conditions that would be applicable to the storage unit at the JCI facility. These provisions adopt the approach EPA took in establishing the containment building requirements and will help ensure that the facility is, as JCI claims it to be, state of the art.

- JCI should follow the requirements for containment buildings for the permitted unit at the facility.
- The building should be a completely enclosed, self-supporting structure that is designed and constructed of man-made materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit, and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes to which they are exposed; climatic conditions; and the stresses of daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls.
- The building should be constructed with a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling equipment within the unit.

- As noted elsewhere in these comments, secondary containment is of paramount importance to the safe operation of a secondary lead smelting facility. The building thus should have a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier. It should also have a liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier and a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier. This should be augmented with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time.

- Controlling fugitive dust emissions is of vital importance and is addressed in the containment building standards, but not incorporated into the draft RCRA permit for JCI. DHEC should revise the permit to require that JCI implement controls sufficient to prevent fugitive dust emissions to meet the no visible emission standard in 40 C.F.R. Section 264.1101(c)(1)(iv).[5] DHEC should also require that the building be designed and operated to ensure containment and prevent the tracking of materials from the unit by

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5 *See also* 40 C.F.R. Part 60, Appendix A, Method 22 -- Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares.

personnel or equipment. JCI should be required to take measures to control fugitive dust emissions such that any openings (doors, windows, vents, cracks, etc.) exhibit no visible emissions. In addition, all associated particulate collection devices (*e.g.*, fabric filter, electrostatic precipitator) should be operated and maintained with sound air pollution control practices. This state of no visible emissions should be maintained effectively at all times during routine operating and maintenance conditions, including when vehicles and personnel are entering and exiting the unit.

To address the defects noted above in the draft RCRA permit for JCI, we further urge DHEC to establish the following design and performance standards for the containment building.

- The containment building must be completely enclosed with a floor, walls, and a roof to prevent exposure to the elements, (e.g., precipitation, wind, run-on), and to assure containment of managed wastes.
- The floor and containment walls of the unit, including the secondary containment system, must be designed and constructed of materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit, and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes to which they are

exposed; climatic conditions; and the stresses of daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls.

- The unit must be designed so that it has sufficient structural strength to prevent collapse or other failure.
- All surfaces to be in contact with hazardous wastes must be chemically compatible with those wastes.
- Incompatible hazardous wastes or treatment reagents must not be placed in the unit or its secondary containment system if they could cause the unit or secondary containment system to leak, corrode, or otherwise fail.
- The containment building must have a primary barrier designed to withstand the movement of personnel, waste, and handling equipment in the unit during the operating life of the unit and appropriate for the physical and chemical characteristics of the waste to be managed.

From the permit application submitted by JCI, it appears that the company anticipates the management of free liquids within the permitted unit. We thus urge DHEC to incorporate the following standards into the permit to ensure the safe management of these free liquids:

- The building should have a primary barrier designed and constructed of materials to prevent the migration of hazardous constituents into the barrier (*e.g.*, a geomembrane covered by a concrete wear surface).

- The permitted building should also have a liquid collection and removal system to minimize the accumulation of liquid on the primary barrier of the containment building.
- The primary barrier of the liquid collection and removal system should be sloped to drain liquids to the associated collection system, and liquids and waste must be collected and removed to minimize hydraulic head on the containment system at the earliest practicable time.
- The system should be constructed with a bottom slope of 1 percent or more be made of a granular drainage material with a hydraulic conductivity of $1\times 10^{-2}$cm/sec or more and a thickness of 12 inches (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of $3 \times 10^{-5}m^2$ /sec or more.

- The secondary containment system should also be constructed of materials that are chemically resistant to the waste and liquids managed in the containment building and of sufficient strength and thickness to prevent collapse under the pressure exerted by overlaying materials and by any.

The permit should also incorporate operational and maintenance controls into the building. These include ensuring that JCI uses controls and practices to ensure containment of the hazardous waste within the unit and maintain the primary barrier to be free of significant

cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier. The permit should also require that JCI maintain the level of the stored/treated hazardous waste within the containment walls of the unit so that the height of any containment wall is not exceeded. Another item missing from the permit or JCI's application is the designation of an area to decontaminate equipment (and with the collection of any rinsate for proper management).

The conditions listed above are commonly employed at other existing secondary lead smelting facilities. And the containment building standards were designed specifically with these facilities in mind. It thus makes sense for DHEC to amend the draft permit to incorporate these standards or controls of a commensurate level.

### C. DHEC Must Require Groundwater Monitoring for Areas that Generate Free Liquids

Based on the permit application and our research into and understanding of the battery reclamation process, we believe it likely that certain areas of the operation, such as the area referred to as "CX" in the permit application, will generate free liquids. Typical operations in the area described by JCI as CX produce separated materials using hydrodyamic water separators and also generate a lead carbonate paste. Both of these activities are likely to produce material streams which contain free liquids that exhibit the D008 characteristic. How are are these free liquid streams contained and/or how are the free liquids separated from the streams?

Typically the process of recyling lead acid batteries has "storage" of the components resulting from the the CX system, such that separated components, other scrap, sludges, drosses,

and fluxes can be mixed (prepared) for metered feeding to the furnace. Typically this storage is accomplished in "piles". If this storage of materials exhibiting D008 charactistic take place in the JCI Florence Recycling Facility the permit must address the areas as fully regulated hazardous waste storage areas.

**D. Additional Detail and Controls Are Required for Wastewater and Storm Water Management**

The footprint of the wastewater treatment plant is very small for a process that utilizes large quantities of water. Even though the use of a sodium sulfate crystallizer reduces the amount of waste water generated the process described by the air permit for this facility (scrubber blow down) and for the waste processes (desulfurization and CX separation water), this does account for a zero discharge from the processes. To date, no pretreatment or NPDES application has been noted received by DHEC. From a RCRA standpoint, if no water permit(s) is needed for process waters, then an explanation of how those waters which exhibit a hazardous characteristics are to be managed is warranted.

On a related note, the permit application states that only the first 0.5 inch of storm water on the active site is to be captured and subsequently treated in the wastewater treatment plant. It is unclear whether this is a separate treatment system from the process water treatment or if it is the same 300,000 gallon recycle tank that is used to manage process water treatment. More clarification is warranted.

More detail and specificity also is needed regarding JCI's system for managing run-off. JCI states that its run-off system will be controlled by a system including curbed pavement,

storm sewers, storm water holding tank, wastewater treatment plant, and a constructed wetland. All storm water that falls on the active portion of the facility will be contained using curbing and pavement. The contained storm water will be collected in a series of culverts and storm water drains. The first flush (the initial half inch of a rainfall event, which would contain the most impacted storm water) from roofs will be collected and transferred to a 250,000 gallon on□site storm water holding tank. The collected storm water will be treated in the on□site wastewater treatment plant, and treated wastewater will be stored in a 300,000 gallon industrial water tank where it will be reused in the recycling process. Once the first flush is captured, the remaining storm water will bypass the storm water holding tank and discharge directly into a constructed wetland. Discharge from the constructed wetland would either be to infiltration or to irrigation. Storm water will not be discharged to surface water.

The process described in the permit application and the air permit for this facility raise a few issues with respect to run-off. First, the hydrodynamic separation waters from the facility will contain dissolved solids in the form of sulfates from residual battery acid (hydrogen sulfate). If these wastewaters are recycled without precipitation of the sulfates, the concentration of sulfates will continue to build until the waters are unusable. There must be a bleed for this process, but that is not apparent from the permit or the application.

Similarly, the desulfurization process at the facility will use soda ash to convert lead sulfate to lead carbonate. The other side of this conversion is the production of water with high concentration of sodium sulfate, which is directed to a crystallization process that produces

sodium sulfate crystals and condensate (clean water) that can be used back in the process. This crystallization process build up contaminates left over from removing the sodium sulfate and water. These contaminates must be bled from the process, but again, it is not apparent from the permit or the application where this is.

Also, concerning the desulfurization process, the reaction of conversion is surface area controlled. Thus, larger crystals of lead sulfate are not fully converted (just the surface). This is why a scrubber is needed on the furnace to remove the $SO_2$ from the non-converted crystals. A soda ash based scrubber also produces concentrated sodium sulfite that can be oxidized to sodium sulfate. Is the facility treating and discharging this stream or are they crystallizing it also?

### E. More Information Is Needed Regarding Raw Materials and Products at the Facility

The permit application's description of its raw materials and products raise several questions. For example, the application states that heavy plastics will be generated and reused as a substitute for commercial chemical product. This activity requires more description, as there is no mention in the application of ebonite case material, which still is found in spent lead acid battery recycling streams. Also, there should be additional explanation as to what commercial chemical product this will be substituted for.

Ferrous scrap metal is also described as being a product from the process. There should be a clearer understanding from whence does this product come. The profile sheets and the permit in general limits its input to "plastic cased lead acid batteries", i.e., no steel or iron clad

batteries can be accepted. There is mention of using steel drums for cracked batteries or other scrap. If the drums are the source for this product, then how are the drums stored and cleaned prior to the product being produced as clean ferrous scrap metal?

Sodium sulfide paste is identified as a raw material. As DHEC knows, sodium sulfide is strongly alkaline and can cause skin burns. Acids react with it to rapidly produce hydrogen sulfide, a toxic gas. It is unclear how this is being used as a raw material, but it is a dangerous item to have in proximity to a process that has acidic solutions. From a RCRA facility location standpoint, one should know how much of this is to be onsite and how is used and managed to prevent release of hydrogen sulfide gas.

## II. DHEC Must Incorporate the CX Area Into the RCRA Permit

JCI's permit application, and the subsequent draft permit issued by DHEC, only list the battery warehouse building as being subject to RCRA permit standards. We believe that the area of the plant identified as "CX" is also subject to RCRA permit standards and that DHEC must amend the permit to incorporate it into the scope of the permit.

According to the permit application, spent batteries will be received at the recycling facility into a warehouse. This warehouse is the only unit of the facility that JCI proposes to be subject to the RCRA permit. However, JCI also states that the batteries will arrive on pallets of 50 to 60 batteries and that up to 60 pallets of spent batteries will be located at the Wet End, referred to in this application as the CX, for continuous feeding of the reclamation process.

CX is subject to RCRA permitting for the same reasons that the battery warehouse must obtain a RCRA permit. It appears that JCI's reasoning for not including the unit in the permit application is that it deems the area to be part of the reclamation process that is exempt from RCRA permitting. This argument makes no sense and, we believe, is contrary to EPA's position regarding battery reclamation activities. Storage of lead acid batteries prior to reclamation is not exempt from RCRA and requires a RCRA permit.[6] The reclamation units themselves are exempt from RCRA permitting, but these are limited to the battery breaking units and the smelting, melting and refining furnaces. For purposes of RCRA regulation, the reclamation process begins at the battery breaking process. Areas used to store lead acid batteries prior to their insertion in the battery breaking area and, subsequently, the furnaces, do not enjoy this exemption. Indeed, the containment building standards discussed above were specifically created by EPA to provide tailored operational and design standards for areas that are used to store the feed into lead smelting, melting and refining furnaces.

DHEC must include the CX area in the RCRA permit and ensure that JCI meets RCRA hazardous waste design, construction, operation and monitoring requirements in the same manner and to the same degree as those required for the battery warehouse. The failure to include the CX area in the permit is a glaring error by both JCI and DHEC.

## III. DHEC Must Incorporate the Charge Preparation Area Into the RCRA Permit

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[6] R.61-79.266.80.

The permit application states that within the Charge Preparation area, pallets of drums with lead scrap will be removed from the trailer using forklifts and placed in a designated area prior to placement of the contents into the feed hopper.[7] For the reasons enumerated in Section II of our comments, this charge preparation area is also subject to RCRA hazardous waste permitting standards. It will be used to store hazardous wastes prior to their insertion into the furnace feed areas and this is not in any way exempt from RCRA permitting standards. DHEC thus must amend the draft permit to establish standards applicable to this area.

## IV. Draft Permit Section I.A., Effect of the Permit

Section I.A. of the draft permit details the scope and effect of the conditions to be imposed on the JCI facility. This section fails to incorporate all regulatory-required issues. Specifically, this section of the permit should state that compliance with the permit during its term constitutes compliance with Subtitle C of RCRA except for those requirements not included in the permit that:

- Become effective by statute;
- Are promulgated by the U.S. Environmental Protection Agency under the land disposal restriction requirements of 40 C.F.R. Part 268;
- Are promulgated under R.61-79.264 regarding leak detection systems for new and replacement surface impoundment, waste pile, and landfill units,

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[7] Draft JCI Permit Application at p. F-8.

and lateral expansions for surface impoundments, waste piles and landfills; and

- Are promulgated under Subparts AA, BB and/or CC of R.61-79.265 limiting air emissions from specified units.

These provisions are self-implementing under RCRA and thus take effect at hazardous waste facilities irrespective of whether the conditions are specified in the permit. Moreover, DHEC's own regulations specify that the effect of a permit does not constitute compliance with the provisions noted above.[8] DHEC thus should amend the permit to reflect that these conditions must be met by JCI. The failure to include these provisions could be construed by the permittee or others that the conditions do not apply to JCI.

This section of the draft permit should also include the following provisions, which are commonly issued as part of RCRA permits in other states:

- The permit does not constitute a defense to any action brought under imminent and substantial endangerment to human health or the environment.
- DHEC's issuance of the permit does not prevent DHEC from adopting or amending regulations that impose additional or more stringent requirements than those in existence at the time the permit is issued, and

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8 R.61-79.270.4.

does not prevent DHEC from the enforcement of these provisions against JCI.

- Failure to submit or maintain any information required in connection with this permit, or falsification and/or misrepresentation of any submitted information, is grounds for revocation of the permit.
- In case of conflicts between permit application provisions, operating plans and/or standard operating procedures, the permit conditions take precedence.

## V. Conclusion

Based upon our review of the draft RCRA permit and JCI's permit application, we believe that the draft permit is inadequate and will not sufficiently protect human health and the environment. DHEC must revise the permit and reissue it in draft form for public comment. Without the changes to the permit described above, there is no assurance that the permit will be protective or issued in compliance with applicable law.

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We appreciate the opportunity to comment on the draft RCRA permit for the proposed JCI lead-acid battery recycling facility.

Very truly yours,

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