Project XL Proposal:
Autoliv Automotive Safety Products, Promontory, UT

Submitted by Brad Theurer,
Environmental Engineer, Autoliv ASP
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Abstract: Autoliv ASP, Inc. is a manufacturer of automobile safety products. The pyrotechnic materials used to deploy air bag inflators are manufactured at Autoliv's Pyrotechnic Processing Facility located in Promontory, Utah in a remote area of Box Elder County. During the manufacturing of these pyrotechnic materials, waste is generated. These reactive hazardous wastes are presently treated at a TSDF permitted for open burning. Autoliv currently operates a $ 3 million Metals Recovery Facility (MRF) designed to recover aluminum and steel from inflator units containing live pyrotechnic material as well as previously fired units. The MRF is capable of recovering, 2000 pounds per hour of recyclable aluminum and steel from off-spec commercial inflator units and their components while minimizing the waste to the environment. Autoliv proposes that this technology be adapted to process Autoliv's waste pyrotechnic materials within the MRF rather than sending the materials to a TSDF for open burning. The MRF has an extensive air pollution control train which is capable of capturing the emissions produced by the waste pyrotechnic materials. With minimal modifications to the operation, Autoliv can achieve a safer, cleaner, and more effective method of disposal than those presently used.

Facility Description

Street address of facility:
Autoliv ASP Inc.
9160 north HWY 83
Promontory, UT 84302

Autoliv's Promontory Facility is located in a remote area of Box Elder County, Utah. The Promontory Facility manufactures pyrotechnic products for use in the airbag industry (SIC code 3714). The Promontory Facility consists of 75 storage and manufacturing buildings concentrated on a 53-acre site (see attachment #1 & #2), employing 460 people. The only bordering neighbor is Thiokol Corporation. The remainder of the bordering area consists of winter cattle range. The extended surrounding area consists of the small farming/ranching communities of Howell located approximately 10 miles to the north and Promontory located 8 miles southwest.

Autoliv has always been at the forefront of environmental performance and responsibility in the state of Utah. In September of 1998, Autoliv became ISO 14001 certified. An Environmental Management System was established and an Environmental Policy was adopted (see attachment #3). In 1994, Autoliv was awarded the Outstanding Industrial Wastewater Plant Award by the Water Environment Association of Utah. Autoliv is a participating member and supports the following organizations: The Utah Industrial Coalition, The Utah Pollution Prevention Association, and the Climate Wise Program. Recently, Autoliv's recycling efforts were recognized by the Utah Pollution Prevention Association and Autoliv will be an award recipient at the November conference. Autoliv wishes to continue to be an environmental leader and feels that the following project plan meets the intent of the XL Program.

The eight criteria required for an XL Project are listed below.

Superior Environmental Results

Autoliv has open burned 183,557 lbs. of pyrotechnic material that was unable to be recovered or recycled during the past two years. The unsightly plume and uncontrolled emissions are a point of concern for all parties involved. Although open burning is the safest and most effective treatment method available at the present time, it is not desired. The present method of open burning allows for no pollution controls. The same pyrotechnic materials, if processed at the MRF, would pass through the air pollution control train rather than being emitted, thus achieving a significant reduction of air pollutants released to the environment, accomplishing far superior environmental performance than open burning. It is projected that Autoliv will eliminate the open burning of 158,000 lbs. of waste pyrotechnic material in the first year of project participation. A net environmental benefit of 22,876 lbs. / yr particulate emissions will be accomplished (see attachment #4).

Additional environmental benefits are achievable due to the fact that certain pyrotechnic formulations contain materials (e.g., copper) that could be recovered in the slag as well as in the baghouse. These materials could then be recycled back to Autoliv's raw material suppliers. The distinctive properties of the waste pyrotechnic materials enable these materials to be disposed of more effectively, cleanly and safely than the present TSDF method.

The specifications governing the airbag industry are very tight and do not allow the use of toxic materials. The major gases produced by Autoliv gas generants are water, carbon dioxide, and nitrogen. The percentage of each of these gases can vary depending on the formulation but a typical analysis would be approximately 40% nitrogen, 40% water, and 20% carbon dioxide. Other gaseous substances are present at ppm levels. These include carbon monoxide (CO), nitrogen dioxide (NO2), nitric oxide (NO), and ammonia (NH3). Our customers require that these trace gases do not exceed specified concentrations when fired from inflators at typical combustion pressures. These levels are given below:

Gas	allowable level ppm
CO	360
NO	50
NO2	5
NH3	25

The chemical analysis information of the solid and gaseous combustion products from burning different gas generant formulations together with the estimated quantities to be processed are attached (see attachment #5).

Analysis of the products of combustion shows that the generants combust to give gases composed of nitrogen, hydrogen, oxygen, and carbon. Specifically for this reason, the materials will be able to be processed effectively in the MRF.

The MRF is presently permitted to operate 24 hours/day, 365 days/year. Actual operation is estimated to be 50 percent of the permitted production capacity. The excess processing capacity will be absorbed by pyrotechnic waste disposal. Minimal changes to the emission streams are expected because the pyrotechnic materials are also present within the inflator units themselves.

All waste pyrotechnic material is currently being sent to Thiokol Corporation, 9160 N. HWY 83 Promontory, Utah. Material has also been sent to ICI Explosive in Joplin, Missouri and Trade Waste Incinerator in Sauget, Illinois.

Cost Savings, Paperwork Reduction, Operational Flexibility

Autoliv disposed of 82,361 lbs. of pyrotechnic waste in 1998 at an incurred cost of $164,722. The pyrotechnic waste could easily have been processed in the MRF with minimal additional operating cost. The projected scrap numbers estimate that 158,000 lbs. of waste material will be generated in the year 2000. The contracted disposal fee at present time is $2.00 per pound. Through Project XL, Autoliv will save $316,000 in disposal costs in the first year.

Explosives would no longer be transported across public roads, increasing public safety and reducing liability and associated costs.

The paperwork burden would be reduced because hazardous waste manifests and shipping papers would not be required. The TSDF profiling process would also be eliminated.

Operational flexibility would allow materials to be processed more regularly, which reduces paperwork and the risk potential associated with storing large quantities of explosives.

In an effort to create new and better automotive safety products, Autoliv's Research and Development group creates small amounts of pyrotechnic materials that are unable to be shipped off-site to a TSDF because no DOT EX classification exists. These small amounts of research materials would be able to be processed at the MRF without burdening the DOT for an EX number.

Autoliv's Brigham and Ogden facilities generate 1.4 explosives which are disposed of at a commercial hazardous waste incinerator because the metal content of these articles is not high enough to justify processing at the MRF. Autoliv will plan to process these 1.4 explosive articles as part of the XL project. This will reduce cost, paperwork and transportation liability.

Stakeholder Involvement

Project XL provides Autoliv, the Utah Division of Environmental Quality and the EPA the opportunity to explore new ways to improve the environment. The neighboring community of Howell, Thiokol Corporation and the surrounding area would benefit by reducing emissions associated with open burning. The highly visible nature of open burning tends people to heighten awareness of the associated environmental impacts. Local health department concerns and complaints will be reduced.

A Kickoff meeting and site tour held on May 7th, 1999 garnered stakeholder support and input for the project plan.

Stakeholders that have been contacted and have given verbal or written support are:
Utah Division of Environmental Quality
Bear River Health Department (see attachment #6)

Howell City (see attachment #7)
Box Elder County (see attachment #8)

Stakeholders have been made aware of Autoliv's intentions and the environmental benefits associated with Project XL. An open house and site tour was held to better inform stakeholders of Autoliv's capabilities and address any questions or concerns.

Working together with the Utah Division of Solid and Hazardous Waste and the Utah Division of Environmental Quality, regulatory issues have been addressed.

Other Stakeholders who have been identified are:
Ducks Unlimited
Golden Spike Monument
Bear River Bird Refuge

Achieve Innovative Pollution Prevention

Autoliv has a history of implementing waste minimization techniques and practices. Constant control over manufacturing with emphasis on quality and waste minimization are observed. Great strides have been made to recycle, reuse or recover scrap pyrotechnic materials or ingredients to reduce the amount of waste generated. Autoliv was ISO 14001 certified in September of 1998, committing itself to a higher degree of environmental awareness and self-regulation by establishing an Environmental Management System. Autoliv is the first pyrotechnic manufacturing facility in the United States to be ISO 14001 certified. Plant recycling efforts and pollution prevention practices have been directed by the Promontory Waste Minimization Team. Elimination, reuse and recycling of waste pyrotechnic materials will continue to be the desired method of waste management. Autoliv has long been at the forefront of pollution prevention and wishes to continue this tradition by participating in the XL program.

Transferability

The process technology and new regulatory approach are transferable and beneficial to large manufacturers of airbags, fireworks and commercial explosives. Autoliv's proposal demonstrates that it is feasible to utilize existing equipment to process hazardous materials in a more efficient and environmentally sound manner than current regulatory and treatment methods allow.

Autoliv recognizes that incineration of reactive materials is not new to the industry. In the past, Autoliv has disposed of material at ICI, TWI and Aptus. Autoliv personnel have conducted TSDF audits at these sites. These visits have provided insight as to how these facilities operate and what their capabilities are. Autoliv's equipment and technology would provide a safe and effective alternative method drawing on what has been observed at these sites.

Autoliv was instrumental in providing information and support to help the Safety Kleen Aptus facility secure its permit to treat 1.4 explosives.

Feasibility

The MRF has a proven history of successful operation and can accommodate the processing of waste pyrotechnic materials with minimal process modifications. The proposed processing scheme incorporates a small combustion chamber that ties directly to the existing gas cleaning train. The gas cleaning train will effectively capture the distinctive emissions of the waste pyrotechnics without the need for additional pollution control equipment. Pyrotechnic materials will be delivered to the combustion chamber by means of a controlled feed system. This design will allow for maximum processing capability without restricting current metal recovery operations. The ability to control the pyrotechnic processing independently from the inflator processing facilitates greater consistency and system control, thus enhancing overall system safety.

Autoliv Management views this project as an exceptional opportunity and has given it high priority, committing the resources necessary to execute and maintain the project. Preliminary engineering activities are currently underway and detail engineering will begin upon approval of the project (see attachment #11). The engineering design will be technically and administratively feasible with process feed rates established to ensure worker safety and maximize process efficiency. A current Process Description and Process Flow Diagram of the Metals Recovery Facility are attached (see attachment #9 & #10).

Identify Monitoring, Reporting, Accountability and Evaluation Methods

Project performance data and information, including the quantity of material processed and the quantity of natural gas consumed, will be made available to stakeholders on a yearly basis. Records accounting for all materials processed through the MRF will be maintained. Stack testing will be conducted periodically to ensure that emission levels are within permit limitations and air pollution equipment is functioning properly. Any other project information, which will allow the EPA and the public to evaluate the success of the project and enforce its terms, will be made available as needed.

A stack-testing baseline will be conducted to verify that all waste pyrotechnic emissions are properly controlled and to ensure compliance with conditions of the Approval Order. Modifications to the Approval Order will be completed if necessary. Stack testing will be conducted by a reputable consultant, (e.g. TETCO) which will perform similar tests to previous stack testing at the Metals Recovery Facility (see attachment #12). The emissions of greatest concern will be the combustion gas emissions, particulate and metals. Autoliv will comply with all applicable federal and state regulations if hazardous air pollutants are found present at any time in quantities that would trigger major source involvement or Title 5.

All materials processed at the MRF are currently recorded. Records of all waste pyrotechnic materials processed will be tracked on a daily basis. Any other reporting requirements, which are deemed necessary

during development of the project plan, will be provided.

A copy of the current MRF Approval Order is attached. (See attachment #13)

Shifting of Risk Burden

The design and remote location of the MRF will protect worker safety and ensure that no one will be subjected to unjust or disproportionate environmental impacts. All Autoliv workers are required to receive extensive safety and explosive training. The processing of all explosive material will be incorporated into the MRF's standard operating procedures. All new waste materials will be approved before processing to ensure that no safety risks or unwanted environmental impacts are present. Autoliv's pyrotechnic expertise and operating record demonstrate the ability to safely and effectively process these materials.

The risk burden shifted to the Metals Recovery Facility will not be greater than current operations for the following reasons:

The need to transport waste pyrotechnic material off-site will be eliminated. The public and other non-Autoliv employees will not be exposed to the risks associated with transportation, loading and unloading of explosives. This increases public safety and reduces liability.

Waste pyrotechnic materials will be processed more regularly reducing the risk associated with the storage of large quantities of materials.

All workers will have extensive explosive handling and safety training.
Industrial hygiene samples will be completed to insure worker safety.

A feed system will be designed to prevent propagation of pyrotechnic materials, thus protecting workers and equipment. Processing capabilities, desensitizing agents, limitations, etc. will be strictly defined. By controlling the feed rates and quantities processed, the risk of processing waste pyrotechnics in the Metals Recovery Furnace will be significantly reduced. All processing will be completed as remotely as possible to minimize worker exposure.

The risk burden to the environment and general public will be reduced because all emissions will be directed through the air pollution control train before being released to the environment. Current operations allow for no emission controls.

Implementing best management handling, training, housekeeping and engineering design practices will minimize the risk of fires and explosions.

Requested Flexibility

Autoliv's project plan is committed and designed to accomplish superior environmental performance provided that operational and regulatory flexibility is granted. Because of the lengthy time period to obtain a RCRA Part B permit and the extensive regulatory and compliance issues involved, it has been determined that the costs to process pyrotechnic materials in the MRF out weigh the benefits. Autoliv believes that this project plan meets the intent of Project XL and wishes to use this program as the legal and regulatory vehicle to accomplish the same goal of superior environmental performance. Autoliv will safely and effectively dispose of their pyrotechnic material in the MRF while reducing emissions/pollutants to the environment. The Utah Division of Solid and Hazardous Waste and the Utah Division of Air Quality have reviewed the following terms and conditions.

Similar to RCRA Part B permitting requirements, the following items will be completed as agreed upon by the State of Utah Division of Solid and Hazardous Waste:

Waste material will still be managed and stored as hazardous waste. Autoliv will comply with RCRA 90-day storage requirements. It is to be understood that in certain circumstances (shut downs, equipment failures, Holidays etc.) that the 90 day requirement will not be feasible and an extension will need to be obtained from the DEQ.

All materials processed will be characterized and trial burns will be conducted to evaluate the safety and the efficiency of the system before new materials will be accepted for processing.

Production levels (formulations and quantities) and the amount of natural gas consumed will be reported each year.

Due to the dynamic and ever changing nature of the airbag industry, it will be pertinent to allow for new development and provide flexibility for future materials. Emission product limitations will comply with airbag industry emissions standards listed in the Superior Environmental Performance section.

Financial Assurance requirements listed in CFR 265 will be completed.

A Corrective Action Module will be completed which will consist of a facility history and a Process Safety Management review.

In addition to processing waste pyrotechnic material, Autoliv's 1.4G and 1.4C explosive articles which are currently being sent to a TSDF will be processed at the MRF.

The Utah Division of Air Quality has agreed that a separate Approval Order will be issued for the pyrotechnic waste disposal process which will serve as an amendment to the existing Approval Order which covers the current operation of processing airbag inflators and their components. The Notice of Intent will be submitted upon project approval.

Enforcement and Compliance Profile

Autoliv's environmental history and compliance record demonstrate its commitment to the environment. The following information is provided to indicate Autoliv's commitment to the project.
The Autoliv Promontory facility has never been sited with any violations of environmental regulations or permits.
The Promontory facility has never been issued a Notice of Violation. There are no ongoing enforcement actions or outstanding compliance issues.
No obligations under an administrative order or judicial decree exist. No litigation against EPA or the state which the company, community or facility is party to; and relevant civil lawsuits pending against the company or facility exist.
Autoliv's ISO 14001 certification requires that all applicable environmental regulations and laws be complied with. Biannual third party and periodic in-house audits are conducted to insure compliance and to maintain certification status.

Summary

Autoliv recognizes that this project will involve the exercise of regulatory flexibility by the EPA in exchange for a commitment on Autoliv's part to achieve superior environmental results than would have been attained through full compliance with current applicable regulations. Autoliv believes that the project plan to utilize the MRF to process waste pyrotechnics complies with the spirit of the XL Program and that significant environmental benefits will be achieved. Autoliv is hopeful that this project plan will be accepted and looks forward to the opportunity to work with the EPA and State Regulators to be part of this pro-active approach to improve the environment.