State of California
AIR RESOURCES BOARD

Resolution 01-42

October 25, 2001

Agenda Item No.: 01-8-2

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code sections 39700 through 39705;

WHEREAS, a proposal, number 01-15, entitled "An Innovative Integrated Approach to Non-Incineration Destruction of Benzene, VOCs and Odors from Metal Casting Operations", has been submitted by Gregg Industries, Inc., in response to the 2001 Innovative Clean Air Technologies (ICAT) Program solicitation;

WHEREAS, the proposal has been independently reviewed for technical and business merit by highly qualified individuals; and

WHEREAS, the Research Division staff and the Executive Officer and Deputy Executive Officers have reviewed and recommend for funding:

> Proposal Number 01-15, entitled "An Innovative Integrated Approach to Non-Incineration Destruction of Benzene, VOCs and Odors from Metal Casting Operations", submitted by Gregg Industries, Inc., for a total amount not to exceed $150,000.

NOW, THEREFORE BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code section 39703, hereby approves the following:

> Proposal Number 01-15, entitled "An Innovative Integrated Approach to Non-Incineration Destruction of Benzene, VOCs and Odors from Metal Casting Operations", submitted by Gregg Industries, Inc., for a total amount not to exceed $150,000.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and agreements for the efforts proposed herein, and as described in Attachment A, in an amount not to exceed $150,000.

I hereby certify that the above is a true and correct copy of Resolution 01-42, as adopted by the Air Resources Board.

Marie Kavan

Marie Kavan, Clerk of the Board

ATTACHMENT A

Innovative Clean Air Technologies (ICAT) Grant Proposal:

"An Innovative Integrated Approach to Non-Incineration Destruction of Benzene, VOCs and Odors from Metal Casting Operations"

Background

Metal casting facilities generate Volatile Organic Compounds (VOCs) and particulate matter from sand handling and core making operations. Molds are usually made from sand, which is mixed with coal and organic additives. Benzene, VOCs, and odors are generated from casting and other sand handling operations. Resins used in cores generate odors during curing and casting operations.

Gregg Industries, Inc., a California iron foundry producing iron castings, has developed a process called "Advanced Oxidation" (AO) to reduce the VOC emissions from sand handling operations and abate odors from core rooms. AO uses water containing ozone and hydrogen peroxide to oxidize the VOCs (which include benzene and odor-causing chemicals). The AO method allows an increased reuse of mold materials such as sand, and usually provides better castings and less scrap metal. A modified AO method has been demonstrated to remove odors from core making operations. It incorporates an ultraviolet (UV) oxidation chamber. This project would be the first demonstration of a combined system to control emissions from both sand handling and core making operations.

Objective

The objective of this project is to determine the effectiveness of novel controls to reduce odors and VOCs from emissions generated at a foundry core room and from the foundry's sand handling operations.

Methods

Gregg will install both an advanced oxidation system and an ultraviolet photocatalytic system. Based on testing and analyzing the performance of the combined system, modifications will be made. A final series of performance tests will then be conducted. Emissions testing will be performed both prior to installation and upon project completion.

Expected Results

This project will demonstrate a device to control odors and VOCs from foundries. The project will also establish the overall technical and economic feasibility of the proposed system. The final report will compare the cost of operating the odor and VOC control device with the savings expected to result from the re-use of casting sands that this technology should make possible.

Significance to the Board

Many foundries are located in populated areas, and adjoining communities frequently file nuisance complaints about odors that result from their operations. This project is expected to demonstrate a technology to control odors and VOCs that would also reduce the foundry's operating costs. While the technology would be tested at an iron foundry, the technology could also be applied to metal casting operations in general. Ultimately, this technology has the potential for controlling emissions from other emission categories, such as the printing industry.

Applicant: Gregg Industries, Inc.

Project Period: 18 months

Principal Investigator: David L. Marshall

ICAT Funding: $150,000

Cofunding: $450,000

Gregg Industries	$300,000
SCAQMD	$150,000

Past Experience with This Principal Investigator: None.

Although staff does not have any prior experience with the PI, the extent of review of ICAT proposals provides a sufficient level of confidence for staff to recommend the proposal for an ICAT award. The ICAT evaluation process includes reviews by five external technical and four external business advisors, as well as internal reviewers from Mobile Source Control and Operations Divisions, Stationary Source Division, Research Division, and the Executive Office.

Prior ICAT Funding to Gregg Industries, Inc.

Year	2000	1999	1998
Funding	$ 0	$ 0	$ 0

BUDGET SUMMARY

Gregg Industries, Inc.

An Innovative Integrated Approach to Non-Incineration Destruction of Benzene, VOCs and Odors from Metal Casting Operations

Direct Costs and Benefits	ICAT	Total
1. Labor	$ 75,375	$165,750
2. Employee Fringe Benefits	$ 26,382	$ 58,014
3. Subcontractors	$ 5,000	$ 37,000
4. Equipment	$ 0	$250,000
5. Travel and Subsistence	$ 23,016	$ 48,783
6. Materials and Supplies	$ 4,038	$ 8,075
7. Other Direct Costs	$ 6,033	$ 12,066
Total	$139,844	$579,688
Indirect Costs		
1. Overhead	$ 9,042	$ 18,084
2. Other Indirect Costs	$ 1,114	$ 2,228
Total	$ 10,156	$ 20,312
Total Project Costs	**$150,000**	**$600,000**