UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
JOHN F. KENNEDY FEDERAL BUILDING
BOSTON, MASSACHUSETTS 02203-0001

January 13, 1997

Steven DeGabriele, Director
Division of Hazardous Materials
Massachusetts Department of Environmental Protection
One Winter Street, 7th Floor
Boston, MA 02108

Re: Cellini Purification Systems

Dear Mr. DeGabriele:

The purpose of this letter is to inform you of an issue regarding EPA and State interpretations of RCRA regulations. The attached memo discusses this issue which was raised at a meeting, at the request of the MADEP Innovative Technologies program, with the EPA and MADEP RCRA programs, the MADEP Industrial Wastewater section, and the EOEA on November 21, 1996, regarding Cellini Purification Systems.

Cellini Purification Systems has been working with the State through the Strategic Envirotechnology Partnership (STEP) program. A result of the STEP process was an examination of potential regulatory barriers to the application of the Cellini Controlled Atmospheric Separation Technology (CAST) system. One of the possible barriers identified was the differing EPA and MADEP interpretations of exemptions from RCRA permitting.

EPA has had two meetings with the MADEP and EOEA at which the issues were highlighted and proposed solutions developed. EPA's role at these meetings was to provide the federal regulatory interpretation of the RCRA permitting exemptions as they may apply to the Cellini system. The attached memo discusses those interpretations.

Since each of the New England states are authorized for the RCRA base program they maintain the authority to make more stringent regulatory interpretations. Individual state regulations may be both more stringent and broader in scope than the EPA regulations. Therefore, while the attached memo discusses the federal RCRA interpretation of the relevant regulations, its application may vary in individual states.

Should you have any questions regarding this memo, please contact me at (617)565-3559. You may also contact Sharon Leitch of the Hazardous Waste Program unit at (617) 565-4879 regarding any technical issues associated with this memo or Jeffry Fowley of the Office of Regional Council at (617)565-1475 regarding any legal issues.

Sincerely,

Edward K. McSweeney
Associate Director of Waste Policy
Office of Ecosystem Protection

enclosure

cc: Gary Gosbee, Chief, Hazardous Waste Program Unit, EPA
Jane Downing, Chief, Massachusetts State Program Unit, EPA
Suzanne Parent, Chief, RCRA Technical Unit, EPA
Jeff Fowley, Office of Regional Council, EPA
Jim Michael, PSPD, EPA-HQ
Kathy Nam, OGC, EPA-HQ
Gina McCarthy, EOEA
Linda Benevides, MADEP
Jim Miller, MADEP
Stephen Brown, Cellini Purification Systems, Ludlow, MA
John Duclos, NHDES
David Sattler, CTDEP
Steve Simoes, VTDEC
Leo Hellested, RIDEM
Stacy Ladner, MEDEP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

MEMORANDUM

DATE: January 13, 1997

SUBJ: RCRA Permitting Exemption For "Zero-Discharge" System Manufactured by Cellini Purification Systems

FROM: Jeffry Fowley, Lead RCRA Attorney, ORC Region I

TO: Gary Gosbee, Chief, Hazardous Waste Program Section

NON-CONFIDENTIAL: MAY BE DISTRIBUTED TO STATE AND COMPANY

I. Introduction

The Commonwealth of Massachusetts is working with five other states to encourage the use of innovative technologies. One of the identified technologies is the Controlled Atmospheric Separation Technology™ ("CAST System") developed by Cellini Purification Systems of Ludlow, Massachusetts. The CAST System will sometimes be used to recycle water and eliminate all wastewater discharges at manufacturing facilities. The State has asked for the Region's view regarding whether the CAST System could be exempted from RCRA permitting when used in this manner. The five possible scenarios for using the CAST System without wastewater discharges are shown (labeled ## 1-5) in the diagram attached to this Memorandum. The State has pointed out that treatment units which have wastewater discharges often are exempted from RCRA permitting pursuant to the "wastewater treatment unit" exemption set out in 40 C.F.R. §§ 264.1(g)(6) and 270.1(c)(2)(v). The State has pointed to an alleged "Catch 22" if the RCRA permitting exemption is lost when the environmentally beneficial step is taken of eliminating all wastewater discharges.

II. Wastewater Treatment Unit Exemption

The State has suggested that even when the CAST System is utilized so that there are no wastewater discharges, the "wastewater treatment unit" exemption should apply. See 40 C.F.R. § 264.1(g)(6). However, this exemption would not apply if the CAST System was installed in a new manufacturing facility that had never had a discharge regulated under the Clean Water Act. As the EPA clarified in the Federal Register, the exemption applies to certain ongoing operations which produce "no treated wastewater effluent as a direct result" of Clean Water Act requirements, but "is not intended to apply" to treatment units at facilities that "are not required to obtain an NPDES permit." 53 Fed. Reg. 34080-34081 (Sept. 2, 1988). See also Letter from Sylvia K. Lowrance, Director, EPA Office of Solid Waste to Thomas

W. Cervino, P.E., Colonial Pipeline Company, dated January 16, 1992, RCRA Compendium # 9522.1992(01) ("If there was never a discharge to surface waters, then the exemption criteria is not satisfied").

I have not examined whether the wastewater treatment unit exemption would apply to even all uses of the CAST System in existing facilities, since that exemption does not apply in any event to new facilities and thus does not address the State's desire to exempt the CAST System from RCRA permitting across-the-board. Moreover, I need not decide to what extent the wastewater treatment unit exemption might apply since, as explained below, I believe the State's concerns can be addressed in the particular case of the CAST System by use of the "totally enclosed treatment" exemption.[1]

III. Totally Enclosed Treatment Exemption

The EPA's regulations exempt totally enclosed treatment facilities from RCRA permitting. 40 C.F.R. §§ 264.1(g)(5), 270.1(c)(2)(iv). "Totally enclosed treatment facility" is defined in 40 C.F.R. § 260.10. The State similarly exempts "treatment integral to the manufacturing process" from RCRA permitting, and defines that term in 310 CMR § 30.010.

EPA Engineer Sharon Leitch of the Region's Hazardous Waste Program section and I have examined the following documents regarding the CAST System: (i) Report to EPA on Environmental Technology Initiative Grant, by Massachusetts Department of Environmental Protection, entitled "Zero-Discharge Regulations: Evaporation and Distillation of Industrial Wastewater," Case Study no. 3; and (ii) Memorandum from Stephen Brown, Cellini Purification Systems, Inc. to Sharon Leitch, dated December 18, 1996 ("Cellini Submission") [copy attached]. Assuming that all of the representations contained in those documents are accurate, and subject to the caveats set forth below, the CAST System appears capable of meeting all of the requirements to be considered totally enclosed treatment, when used in the scenarios labeled as ## 1-5 in the diagram attached to this Memorandum:

1. A totally enclosed treatment facility must be "directly connected to an industrial production process." 40 C.F.R. § 260.10. As shown in the diagram attached to this Memorandum, scenarios ## 1-5 all envision the use of the

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[1] Since I believe that the State's concerns can be resolved under the "totally enclosed treatment" exemption, I also am not examining under which scenarios the CAST System would be considered to be closed-loop recycling under 40 C.F.R. § 261.4(a)(8).

CAST System in a manner directly connected to a manufacturing process. In the Cellini Submission, the company has confirmed that it is intended that the CAST System be connected with the manufacturing operation entirely by closed pipes.

2. A totally enclosed treatment facility also must be "constructed and operated in a manner which prevents the release of any hazardous waste or any constituent thereof into the environment during treatment." 40 C.F.R. § 260.10. As explained in EPA's Guidance entitled "Totally Enclosed Treatment Facility: Regulatory Clarification," RCRA Compendium # 9432.1983(01) ("Totally Enclosed Guidance"), several requirements must be met to pass this test. First, the treatment facility must be completely contained on all sides. In the Cellini Submission, the company has confirmed that this is how the CAST System is designed. Second, there must be no predictable potential for overflows and spills. For example, the system's tanks and pipes must be made of impermeable materials. The use of such impermeable materials and the many other protections against leaks and spills employed in the CAST System are documented in the attached Cellini Submission.

Finally, the system must be constructed to prevent air emissions. As confirmed in the Cellini Submission, the CAST System is designed to have no air emissions. It has no vented emissions and "CAST systems operate under nearly a full vacuum and hence do not produce any fugitive emissions." Cellini Submission, page 2.

Of course, there is always some possibility, however slight, of leaks and fugitive emissions, from any system. For example, when the CAST System is operated so as to create a product or waste (scenarios ## 2-5 on attached diagram), there could be fugitive emissions when the product or waste is removed from the system. These emissions, however, do not come directly from the treatment operation itself. In any event, while the totally enclosed treatment system exemption has been interpreted narrowly, some carefully designed systems can fall within its terms. The CAST System appears capable of meeting the test that there be "negligible potential" for emissions set forth in the EPA's "Totally Enclosed Guidance," page 7, as well as the more recently expressed tests that the system be designed not to have air emissions and be constructed and operated so as to prevent the release of hazardous constituents "not only on a routine basis but also during a process upset." 55 Fed. Reg. 25454, 25473 (June 21, 1990).

CAVEATS:

1. In this Memorandum, I am simply determining that the CAST System appears capable of meeting the tests for the totally enclosed treatment system exemption. Obviously, the manner in which this system is installed will determine whether or not the system qualifies as a totally enclosed treatment system in any particular case. For example, if the system was installed without being directly connected to an initial generator's manufacturing process, or was installed without being completely contained, the exemption would not apply. Whether the exemption will apply in any particular case also will depend on the how the system is operated. For example, the exemption could be lost if at a particular manufacturing plant, the system was not properly maintained or there were not effective protections against spills.

2. In this Memorandum, I am not addressing the State DEP's proposal to consider as totally enclosed, systems which have some air emissions but which meet a three part test of (i) having emission control devices which effectively prevent emissions, (ii) having in place a properly implemented leak detection program, and (iii) being in facility-wide compliance with all air requirements, including fugitive emission requirements.
I also am not addressing the State's Environmental Results Program ("ERP") proposal to exempt from RCRA permitting certain facilities with up to 5 tons per year of air emissions.
I need not reach these issues in this Memorandum, since the CAST System appears capable of meeting the tests for the totally enclosed treatment exemption as traditionally defined.
The Region intends to work with the State on an ongoing basis on these other issues.

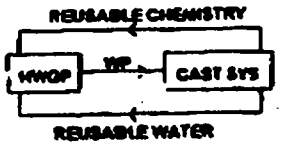
3. It should be emphasized that the totally enclosed treatment exemption is an exemption only from RCRA permitting for the treatment system. Other RCRA requirements will continue to apply. For example, if the CAST System generates a hazardous waste, RCRA generator requirements will apply, including manifesting if the waste is shipped off-site.

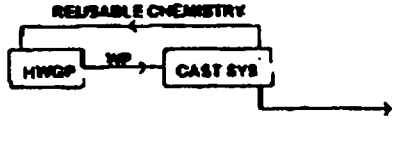
POSSIBLE CAST SYSTEM INSTALLATIONS

CAST SYS = CONTROLLED ATMOSPHERE SEPARATION TECHNOLOGY SYSTEM
WP = WASTE PRODUCT
HWGP = HAZARDOUS WASTE GENERATING PROCESS

no installations / fear of reopening permit

#1





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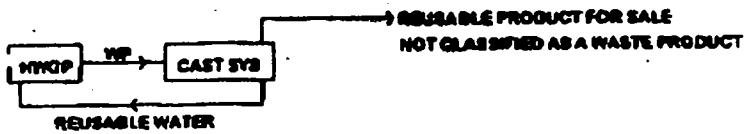

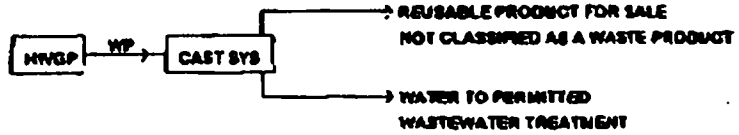

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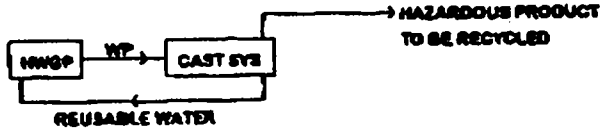

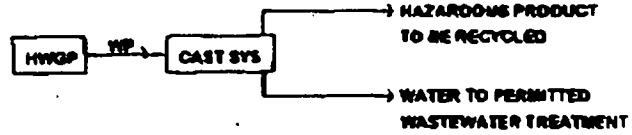

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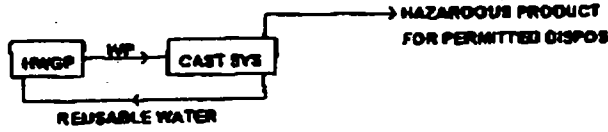

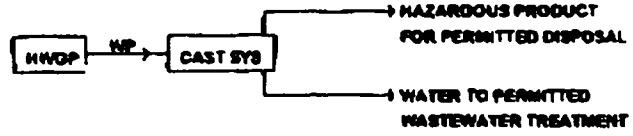

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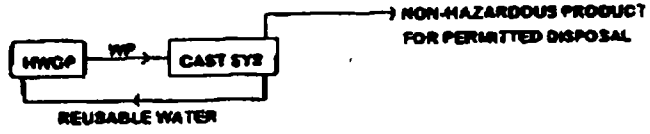

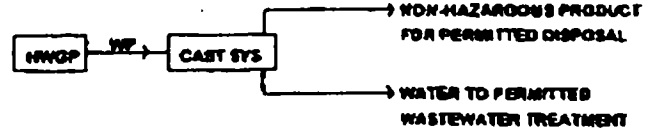

NOTES:
1. CAST SYSTEMS UTILIZE VACUUM ASSISTED FLASH DISTILLATION
2. CAST SYSTEMS DO NOT DISCHARGE ANY PRODUCT TO THE AIR
3. CAST SYSTEMS DO NOT EVAPORATE WATER INTO THE ATMOSPHERE
4. CAST SYSTEMS CAN BE USED WITH OTHER TYPES OF TREATMENTS TO RECOVER PRODUCTS FOR REUSE OR RECYCLING
5. CAST SYSTEMS CAN BE USED WITH OTHER TYPES OF TREATMENT TO RENDER PRODUCTS NON-HAZARDOUS
6. IN MOST CASES, CLIENTS HAVE PERMITTED WASTE TREATMENT IN ADDITION TO CAST SYSTEMS; other wastes treated or other hazardous waste generated. All have permits.

FAX TRANSMISSION SHEET

CELLINI PURIFICATION SYSTEMS INC.
290 MOODY STREET
LUDLOW, MA. 01056-1244
(413) 589-1601
FAX (413) 589-7301
E-mail: cellini@worldnet.att.net

To: Ms. Sharon Leitch, US EPA

Date: December 18, 1996

From: Mr. Stephen Brown, CPS

Re: Follow up on your FAX .

Page: 1 of 3

Dear Sharon,

I hope that the following explanation is sufficient to answer the questions raised by the FAX you sent and our phone conversation.

- CAST™ systems are completely hard piped. All piping is welded, solvent bonded or fusion bonded to prevent leakage. All connections are flanged or fitted with unions. All flange gaskets and union o-rings are constructed from TFE, Viton, Kel-Rez or similar corrosion resistant elastomers. All pipe, fittings, vessels, etc. are constructed of CPVC, FRP, 316 SS or similar corrosion resistant materials. All pumps, heat exchangers and instruments are constructed of 316 SS, titanium, Hastelloy or similar corrosion resistant materials. The actual materials utilized are a function of the specific process chemistry and are very carefully selected to provide years of safe, corrosion/erosion resistant service.

x

- Piping connecting a CAST™ system to a manufacturing process is always hard piped in an appropriate material. The pipe runs are always maintained within secondary containment. In most cases, this type of containment consists of a walled in sealed floor area. Double containment piping may be used if warranted.

x

- CAST™ systems have no vents.

x

- CAST™ systems can be connected directly to the existing manufacturing process tanks. In some instances, flow equalization tanks may be used. These tanks are always covered and constructed from an appropriate material. The solutions contained in these tanks are existing process solutions or water which will be reused in the manufacturing process.

x

- CAST™ systems are primarily marketed as closed loop resource recovery systems which do not produce waste products. However, CAST™ systems are also used to recover water for reuse while reducing the overall volume of waste product generated by a manufacturing process. In this instance, the reduced quantity of waste is pumped through hard pipe to an approved container. The waste is taken off site by a licensed waste treatment/management source for recycle or approved disposal.

x

- All tanks and vessels contained within a CAST™ system or connected to a CAST™ system are fitted with over flow piping, process level monitoring and HI/LOW shut down floats. Tank over flow piping is connected to appropriate storage tanks or licensed/approved waste treatment systems. All tanks and vessels contained within a CAST™ system or connected to a CAST™ system are fitted with appropriate isolation valves, drain valves, access ports and sight glasses.

x

- CAST™ systems are fitted with redundant temperature, pressure, liquid level and power controls. These controls interface with the CAST™ system's electronic package. The operation of the system is fully automatic and completely fail-safe in nature. CAST™ systems are fitted with automatic isolation valves which isolate the individual sub-systems contained within the CAST™ system. Additionally, these valves are designed to prevent the accidental discharge of process solution in the event of a mechanical failure. CAST™ systems are also fitted with manually operated service valves which allow an operator to selectively isolate components for cleaning or maintenance without exposing the remaining system to atmosphere. All CAST™ system operations can be manually overridden in the event of a control system problem.

- CAST™ systems operate under nearly a full vacuum and hence do not produce any fugitive emissions.

CPS would be very pleased to have you and any of your colleagues visit our plant. We currently have a small system on the shop floor which can be made available for inspection. Please feel free to call me to arrange a visit or if you have any other questions or comments. We at CPS look forward to developing a close working relationship with both the US EPA and MA DEP, and would gladly cooperate with you in any way possible. I look forward to hearing from you. Thank you.

Sincerely,

Stephen H Brown

PS Visit our Web Site at http://www.cellinicps.com