South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

January 18, 2012

Mr. Gerardo Rios
Chief – Permits Office
U.S. EPA - Region IX
75 Hawthorne Street, Air 3
San Francisco, CA 94105

Subject: University of California, Irvine (ID 800288) – Title V Permit Revision

Dear Mr. Rios:

University of California, Irvine has proposed to revise their Title V permit under application no. 526400 by adding a crematory. This is a college (SIC 3840) located at 4600 Health Science Road, Irvine, CA 92697. This proposed permit revision is considered as a "de minimis significant permit revision" to their Title V permit. Attached for your review are the evaluation and section D of the Facility permit for the proposed revision. With the receipt of the proposed Title V permit revision today, we will note that the EPA 45-day review will begin on January 18, 2012.

If you have any questions or need additional information regarding the proposed permit revision, please call Mr. Marcel Saulis at (909) 396-3093.

Very truly yours,

Brian L. Yeh
Senior Manager
Mechanical, Chemical and Public Services
Engineering and Compliance

BLY:AYL:JTY:mbs

Enclosures

ENGINEERING EVALUATION FOR TITLE V DE MINIMIS PERMIT REVISION

COMPANY NAME AND ADDRESS

University California Irvine
4600 Health Sciences Road
Loma Linda, CA 92354

CONTACT: Kirk Matin, Environmental Manager, (949) 824-4578

EQUIPMENT LOCATION

AQMD ID 800288
4600 Health Sciences Road
Irvine, CA 92697

EQUIPMENT DESCRIPTION

CREMATORY, AMERICAN CREMATORY, MODEL A-200HT, WITH A 500,000 BTU PER HOUR, NATURAL GAS FIRED, ECLIPSE THERMJET, MODEL, TJ0050, PRIMARY BURNER, A 1,000,000 BTU PER HOUR, NATURAL GAS FIRED, ECLIPSE THERMJET, MODEL, TJ0100, SECONDARY CHAMBER BURNER, AND A 5 H.P. COMBUSTION AIR BLOWER.

BACKGROUND/SUMMARY

University of California Irvine (UCI) operates the Willed Body Department that accepts donated bodies that are used for scientific anatomical studies and research for UCI and its affiliates. An application was submitted to install a new crematory on campus to incinerate used cadavers from the Department. The facility is in the Title V program and has a Title V permit (alternative format). Table 1 summarizes the applications that were submitted by UCI.

Table 1 Application Summary

A/N	Equipment	Submittal Date	Deemed Complete	BCAT/ CCAT	Schedule	Filing Fees
526399	Crematory	8/17/11	9/28/11	183	C	$3,359.43
526400	TV De minimis Permit Revision	8/17/11	9/28/11	555009	-	$873.58

The type of crematory proposed is a multiple chamber incinerator; two chambers namely primary and secondary. The secondary chamber will be heated first by igniting the afterburner to an operating temperature of 1500°F. The secondary chamber is first preheated to ensure any gases from the human remains in the primary chamber are completely combusted. A cremation case charge (human remains and/or parts enclosed in a cardboard casket or body bag) is introduced into the primary chamber on the hearth that allows for maximum exposure to the primary burner's flame. The charge door is closed and the control timers are set and the power switch is activated; low fire ignition burner of the primary chamber is activated. The primary burner is set at 1600°F. If the temperature is exceeded the burner will automatically adjust to low fire at 15,000 Btu/hr. The cremation process takes approximately 2 hours to complete depending on the weight of the decedent.

The emissions from the crematory retorts will be from natural gas combustion as well as from the incineration of human remains, which generate ROG emissions. Minute quantities of toxic emissions will also be generated from the equipment. It is unlikely that any odors will be generated with a proper operating modern crematory retort, as the combined design of the primary and secondary burners account for sufficient temperature, turbulence and residence time.

The new crematory is an American Crematory model each rated at 1,500,000 Btu/hr; primary chamber has a 500,000 Btu/hr burner and the afterburner is rated at 1,000,000 Btu/hr. The new unit will be conditioned with a monthly limit on the amount of cadavers that can be incinerated to ensure compliance with Rule 1401 – New Source Review for Toxics.

COMPLIANCE REVIEW

A review of the District compliance database reveals that a Notice of Violation (NOV) P53695 was issued to the facility on 7/27/11 for exceeding the allowable 4.2 hours for testing and maintenance in one month of an emergency generator; and not having an operational time meter on another engine and not having operating logs. UCI is subject to periodic inspections and District enforcement tracks their compliance status.

EMISSION CALCULATIONS

Table 2 Data

Parameter	Value	Unit	Source
Rating	1.5	MMBtu/hr	Manufacturer
Cremation Rate	150	lbs/hr	Maximum charge capacity per manufacturer's data
Monthly Limit	5000	lbs/mo	Applicant
Schedule	173	hrs/mo	Calculated as 8 hrs/day x 5 days/wk x 4.33 wks/mo
	8	hrs/day	Applicant

Table 3 Emission Rates of Natural Gas Combustion for Crematory

Pollutant	EF (ppm @ 3% O_2)[a]	EF (lb/MMscf)[b]	Heat Input (MMscf/hr)	Mass Emission Rates			30-Day[f]
				lb/hr[c]	lb/day[d]	lb/yr[e]	
NOx	60	76.46	0.00143	0.11	0.87	227	0.63
SOx	-	0.67	0.00143	0.00	0.01	2	0.01
PM10	-	7.50	0.00143	0.01	0.09	22	0.06
CO	-	35.00	0.00143	0.05	0.40	104	0.29
ROG	-	7.00	0.00143	0.01	0.08	21	0.06

[a] NOx rate is Rule 1147 requirement.
[b] AQMD Default emission factors for SOx, PM10, CO and ROG. NOx EF calculated with 3% O2 correction.
[c] Emission Rate (lb/hr) = EF (lb/MMscf) x Heat Input (MMscf/hr)
[d] Emission Rate (lb/day) = Emission Rate (lb/hr) x Schedule (hrs/day)
[e] Emission Rate (lb/yr) = Emission Rate (lb/hr) x Schedule (hrs/month) x 12 months/year
[f] 30 Day = Emission Rate (lb/yr) ÷ 360

Table 4 ROG Emissions from Human Remains Cremation and Natural Gas Combustion

Pollutant	EF (lb-ROG/ton)[a]	Limit (lbs/month)	Mass Emission Rates			30-Day[e]
			lb/hr[b]	lb/day[c]	lb/yr[d]	
ROG	2	5000	0.15	1.2	60	0.17
					Total ROG[f]	0.23

[a] Default emission factor - SCAQMD Mechanical Permit Processing Team
[b] Emission Rate (lb/hr) = EF (lb/ton)/2000 x Cremation Rate (lbs/hr)
[c] Emission Rate (lb/day) = Emission Rate (lb/hr) x Schedule (hrs/day)
[d] Emission Rate (lb/yr) = EF (lb/ton)/2000 x Limit (lbs/mo) x 12 (mos/yr)
[e] 30-Day = EF (lb/ton)/2000 x Limit (lbs/mo) ÷ 30 (days/mo)
[f] Total ROG is the combination of human remains cremation and natural gas combustion from Table 3

RULES EVALUATION

RULE 212-STANDARDS FOR APPROVING PERMITS AND ISSUING PUBLIC NOTICES

Rule 212 requires that a person shall not build, erect, install, alter, or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants without first obtaining written authorization for such construction from the Executive Officer. Rule 212(c) states that a project requires written notification if there is an emission increase for ANY criteria pollutant in excess of the daily maximums specified in Rule 212(g), if the equipment is located within 1,000 feet of the outer boundary of a school, or if the MICR is equal to or greater than one in a million ($1x10^6$) during a lifetime (70 years) for facilities with more than one permitted unit, source under Regulation XX, or equipment under Regulation XXX, unless the applicant demonstrates to the satisfaction of the Executive Officer that the total facility-wide maximum individual cancer risk is below ten in a million ($10x10^6$) using the risk assessment procedures and toxic air contaminants specified under Rule 1402; or, ten in a million ($10x10^6$) during a lifetime (70 years) for facilities with a single permitted unit, source under Regulation XX, or equipment under Regulation XXX.

FACILITY / EQUIPMENT AND SCHOOL LOCATIONS

The equipment will be located on the UCI campus in Irvine. An online search was used to determine if there were any k-12 schools located within 1000 feet (please see attached). Since no schools were found within 1000 feet, a school notice is not required per section (c)(1).

DAILY EMISSIONS

The total daily emissions for the project shown in Tables 3 and 4 do not exceed the daily thresholds of Rule 212(g); therefore, a public notice is not required for section (c)(2).

MAXIMUM INDIVIDUAL CANCER RISK (MICR)

The total MICR is less than $1x10^6$, as shown in the discussion under the Regulation XIV section; therefore, a public notice is not required for section (c)(3).

RULE 401 - VISIBLE EMISSIONS

This rule limits visible emissions to an opacity of less than 20 percent (Ringlemann No.1), as published by the United States Bureau of Mines. It is unlikely, with the proper operation of the equipment in accordance with the manufacturer's guidelines that there will be visible emissions. However, in the unlikely event that visible emissions do occur, anything greater than 20 percent opacity is not expected

to last for greater than 3 minutes. During normal operation, no visible emissions are expected. Therefore, compliance with this rule is expected.

RULE 402 - NUISANCE

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property.

According to the manufacturer, odor may be emitted from the stack after the cremation process has taken place, due to grease left in the refractory that has not been properly burned off. This problem can be corrected by leaving the afterburner and main burner on to burn off any grease. The problem occurs when the unit is turned off before cremation process is complete. The manufacturer states that personnel that are trained and certified to operate the equipment are able to prevent this occurrence. The proper operation of the crematory retorts according to the manufacturer's guidelines is not expected to create any nuisance issues. Therefore, compliance with Rule 402 is expected.

RULE 404 – PARTICULATE MATTER - CONCENTRATION

The purpose of the rule is to prohibit the discharge into the atmosphere of particulate matter in excess of the concentrations shown in Table 404(a). The results below demonstrate that crematory retorts will comply with the concentration limits of this rule.

Stack flow (scf/hr) = Fd x 20.9/(20.9-O2%) x TFD
Fd = 8710 dscf/MMBtu
O2 = 3%
TFD = 1.5 MMBtu/hr

Therefore,

Stack Flow (scf/hr) = 8710 x 20.9/(20.9-3) x 1.5 = 15255 scf/hr

Combustion Particulate (gr/scf) = PM10 (lb/hr) ÷ Stack Flow (scf/hr) x 7000 (gr/dscf)
= 0.01 ÷ 15255 x 7000
= 0.005 gr/scf

The estimated particulate concentration of 0.005 gr/scf complies with the 0.196 gr/scf limit shown in table 404(a). Therefore, compliance is expected.

RULE 405 – SOLID PARTICULATE MATTER - WEIGHT

The purpose of the rule is to prohibit the discharge into the atmosphere of particulate matter in excess of the rates shown in Table 405(a). The crematory retorts have a capacity of 150 lbs/hr. The particulate emissions taken from table 3 are 0.01 lbs/hr, which is much less than the 0.99 lb/hr limit shown in table 405(a). Therefore, compliance is expected.

RULE 407 – LIQUID AND GASEOUS AIR CONTAMINANTS

This rule limits CO emissions to 2,000 ppmvd and SO_2 emissions to 500 ppmvd, averaged over 15 minutes. For natural gas combustion, the CO emissions are expected to be 45 ppmvd @ 3% O2. For SO_2, equipment which complies with Rule 431.1 is exempt from the SO_2 limit in Rule 407. The

applicant will be required to comply with Rule 431.1 and thus the SO_2 limit in Rule 407 will not apply. Compliance with this rule is expected. This rule is not applicable to the engines.

RULE 409 – COMBUSTION CONTAMINANTS

This rule restricts the discharge of contaminants from the combustion of fuel to 0.1 grain per cubic foot of gas, calculated to 12% CO_2, averaged over 15 minutes. A Model A-200HT was source tested on 5/28/03 under the jurisdiction of the Sacramento Air Quality Management District. The source test was conducted for PM concentration and was done in triplicate using ARB and EPA methods. The average was 0.031 gr/dscf corrected to 12% CO2 (a copy of the report is in the project file). An initial source test will be conducted on this equipment as well to verify that compliance is achieved.

RULE 431.1-SULFUR CONTENT OF GASEOUS FUELS

The crematory retorts will use pipeline quality natural gas which will comply with the 16 ppm sulfur limit, calculated as H2S, specified in this rule. Natural gas will be supplied by the Southern California Gas Company which has a H2S content of less 0.25 gr/100scf, which is equivalent to a concentration of about 4 ppm. Compliance is expected. The applicant will comply with the reporting and record keeping requirements as outlined in subdivision (e) of this Rule.

RULE 473-DISPOSAL OF SOLID AND LIQUID WASTES

As discussed under the Rule 409 section, the PM concentration is expected to be less than the 0.1 grain per cubic foot of gas limit of this rule. Therefore, compliance is expected.

RULE 1147 – NOX REDUCTIONS FROM MISCELLANEOUS SOURCES

The purpose of the rule is to reduce nitrogen oxide emissions from gaseous and liquid fuel fired combustion equipment as defined in this rule. The rule applies to crematories.

Paragraph (c)(1) of the rule states that "on or after January 1, 2010 any person owning or operating a unit subject to this rule shall not operate the unit in a manner that exceeds the applicable nitrogen oxide emission limit specified in Table 1 (of the rule) at the time a District permit is required for the operation of a new, relocated or modified unit or, for in-use units, in accordance with the compliance schedule in Table 2 (of the rule), or at the time of a combustion modification".

The crematory proposed by UCI will operate above 1200 °F and therefore is subject to 60 ppm (@ 3% O2) or 0.073 lb/MMBtu. An emissions guarantee was provided by the manufacturer of the burner that attests to the performance of the burner to achieve the required emission limit. An initial source test will be required to verify the vendor's guarantee.

Paragraph (c)(3) requires a source test protocol to be submitted at least 90 days prior to the scheduled test prior to the scheduled test and approved by District Source Testing Division. UCI will be required to submit a protocol prior to initial testing.

Paragraph (c)(7) requires UCI to perform combustion system maintenance in accordance with the manufacturer's schedule and specifications. A copy of the manufacturer's, distributor's, installer's or maintenance company's written maintenance schedule and instructions must be maintained on site as well as records of maintenance activity for a period of not less than 3 years. Source test reports shall also be maintained on site.

Paragraph (c)(12)(A) requires that the model number and rated heat input capacity of the unit be displayed on a permanent rating plate.

Paragraph (d)(5) states that records of source tests shall be maintained for ten years and made available to District personnel upon request.

NEW SOURCE REVIEW (NSR)
The following section describes the NSR analysis for this project and it will be evaluated for compliance with the rules in the table below.

Table 5 Applicable NSR Rules

Applicable NSR Rules (NOx, SOx, PM_{10}, CO & VOC)
Rule 1303(a) - BACT
Rule 1303(b)(1) - Modeling
Rule 1303(b)(2) - Offsets
Rule 1303(b)(3) - Sensitive Zone Requirements
Rule 1303(b)(4) - Facilitywide Compliance
Rule 1303(b)(5) - Major Polluting Facilities

RULE 1303(a) – BACT
These rules state that the Executive Officer shall deny the Permit to Construct for any new source which results in an emission increase of any non-attainment air contaminant, any ozone depleting compound, or ammonia unless the applicant can demonstrate that BACT is employed for the new source. The addition of the new equipment at this existing facility will result in an increase in emissions; therefore, BACT requirements are applicable.

A survey of BACT determinations[1] for crematories is summarized in table 6 along with a comparison to the proposed crematory to be installed at UCI. The proposed crematory meets District BACT requirements.

Table 6 Achieved in Practice BACT Requirements for Crematories

Pollutant	SCAQMD BACT	BAAQMD BACT	SJVUAPCD BACT	UCI Proposal	Complies?
NOx	Natural Gas	Natural Gas Firing	Natural Gas Fuel	60 ppmvd @ 3% O2	Yes
CO		Secondary Combustion Chamber, ≥ 1500 °F		Secondary Combustion Chamber, ≥ 1600 °F	Yes
VOC	Secondary Combustion Chamber, ≥ 1500 °F	Secondary Combustion Chamber, ≥ 1500 °F	Natural Gas Fuel and Secondary Combustion Chamber (afterburner), ≥ 1600 °F	Secondary Combustion Chamber, ≥ 1600 °F	Yes
PM_{10}	Secondary Combustion Chamber, ≥ 1500 °F	1. Secondary Combustion Chamber, ≥ 1600 °F (set point at 1650 °F) 2. Secondary Combustion Chamber, ≥ 1500 °F	Natural Gas Fuel and Secondary Combustion Chamber (afterburner), ≥ 1600 °F	Secondary Combustion Chamber, ≥ 1600 °F	Yes
SOx	Natural Gas	Natural Gas Firing	Natural Gas Fuel	Natural Gas	Yes

[1] The BACT requirements were taken from the South Coast Air Quality Management District (SCAQMD), Bay Area Air Quality Management District (BAAQMD), and the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) BACT determinations. No determinations were found in the EPA or ARB databases for crematories. Refer to application package.

RULE 1303(b)(1) - MODELING

The emissions from the crematory are less than the allowable emissions shown in table A-1 of the rule; therefore, no further modeling analysis is required for the crematory. Compliance is expected.

RULE 1303(b)(2) - OFFSETS

The 30-Day NOx emissions shown in Table 3 are higher than 0.5 lbs/day; therefore, since the facility NOx PTE exceeds the offset thresholds from Table A of Rule 1304(d)(2)(B). However, UCI is an essential public facility which may request offsets through the District's Priority Reserve per Rules 1302(m) and 1309.1(b)(3). Therefore, no external offsets are required.

RULES 1303(b)(3) – SENSITIVE ZONE REQUIREMENTS

Credits were obtained from the Priority Reserve. Sensitive zone requirements are not applicable.

RULE 1303(b)(4) – FACILITY COMPLIANCE

A NOV was issued to the facility on 7/27/11 as discussed in the Compliance Review section of this evaluation. The progress towards compliance is currently under the scrutiny of the District enforcement staff; therefore, UCI is on track to achieving full compliance.

RULE 1303(b)(5) – MAJOR POLLUTING FACILITIES

The facility is an existing Major Source; however, the addition of the new crematory is not a Major Modification as defined in Rule 1302(r). The increase in emissions will be less than 1 pound per day for both NOx and VOC as shown in Table 3. Therefore, no further analysis is required.

RULE 1401 – NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

This rule is applicable to applications deemed complete on or after June 1, 1990 and it imposes specific limits for maximum individual cancer risk (MICR), cancer burden, and non-cancer acute and chronic hazard indices from new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants (TAC) listed in Table I of Rule 1401. The rule establishes allowable risks for permit units requiring new permit pursuant to Rules 201 or 203. The proposed crematory are new construction and an increase in TAC emissions, thus Rule 1401 applies to this project.

Table 7 shows the TAC emission rates for the crematory calculated using the AQMD Rule 1401 Risk Calculator spreadsheet that was used to determine the risk levels associated with the operation of the equipment.

Table 7 TAC Emissions from Crematory

Compound	EF (lb/ton)[a]	Rate (lb/hr)[b]	Rate (lb/yr)[c]
Arsenic and arsenic compounds (inorganic)	4.00E-04	0.00003	1.20E-02
Beryllium (and beryllium compounds)	1.84E-05	1.38E-06	5.52E-04
Cadmium and cadmium compounds	1.46E-03	0.00011	4.38E-02
Chromium, hexavalent	1.91E-04	1.43E-05	5.73E-03
Polychlorinated Dibenzofurans (PCDF) (as 2,3,7,8-Eqiv) and total	1.43E-07	1.07E-08	4.29E-06
Polychlorinated Dibenzo-p-Dioxins (PCDD) (as 2,3,7,8-Eqiv) and total	7.74E-08	5.81E-09	2.32E-06
Formaldehyde	2.89E-09	2.17E-10	8.67E-08
Hydrogen chloride (hydrochloric acid)	1.97E+00	0.14775	5.91E+01
Lead and lead compounds (inorganic, including elemental lead), including but not limited to:	9.39E-03	0.000704	2.82E-01
Nickel & nickel compounds (except nickel oxide):	5.09E-04	3.82E-05	1.53E-02
Mercury and mercury compounds (inorganic)	5.32E-03	0.000399	1.60E-01
PolyCyclic Aromatic Hydrocarbon (PAHs)	9.63E-04	7.22E-05	2.89E-02

[a] TAC emission factors from USEPA Non-Point HAP Source Estimates - August 26, 2003; hexavalent chromium from San Diego APCD
[b] Rate (lb/hr) = EF (lb/ton) ÷ 2000 lb/ton x 150 lbs-parts/hr
[c] Rate (lb/yr) = EF (lb/ton) ÷ 2000 lb/ton x 5000 lb/mo x 12 mos/yr

A Tier 3 risk assessment was performed using the stack data provided by the manufacturer and the emission rates determined from the spreadsheet. The results are for each unit is shown in table 8 below.

Table 8 Rule 1401 Results

Scenario	Cancer Risk	Chronic Risk	Acute Risk	Cancer Burden
Workplace Receptor	8.15E-07	1.64E-02	2.70E-02	n/a
Residential Receptor	2.55E-07	3.68E-03	4.87E-03	n/a

The MICR is less than 1E-06 and the HIA and HIC are each less than 1 for each type of receptor; however, in order for each unit to remain below these levels the crematory will have **a maximum throughput limit of 5,000 pounds of cadavers per month**. Compliance with the permit limits will ensure compliance with Rule 1401.

RULE 1406 – CONTROL OF DIOXIN EMISSIONS FROM MEDICAL WASTE INCINERATORS

The purpose of the rule is to reduce dioxin emissions from medical waste incinerators. UCI is proposing to install a crematory to incinerate cadavers used in anatomy classes for medical school instruction. Provided that UCI does not incinerate any chlorinated compounds along with the cadavers, the requirements of this rule are not applicable. A condition will be placed on the permit to ensure compliance.

40 CFR PART 60 SUBPART Ec – NEW SOURCE PERFORMANCE STANDARDS FOR HOSPITAL/MEDICAL/INFECTIOUS WASTE INCINERATORS CONSTRUCTED AFTER JUNE 20, 1996

UCI is proposing to install a crematory to incinerate cadavers used in anatomy instruction; therefore, the requirements of this subpart are not applicable provided that UCI does not incinerate "medical/infectious waste" along with what they have proposed to incinerate.

§62.14490 defines "*medical/infectious waste*" as...

"any waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals that is listed in paragraphs (1) through (7) of this definition. The definition of medical/infectious waste does not include hazardous waste identified or listed under the regulations in part 261 of this chapter; household waste, as defined in §261.4(b)(1) of this chapter; ash from incineration of medical/infectious waste, once the incineration process has been completed; human corpses, remains, and anatomical parts that are intended for interment mation; and domestic sewage materials identified in §261.4(a)(1) of this chapter.

(1) Cultures and stocks of infectious agents and associated biologicals, including: cultures from medical and pathological laboratories; cultures and stocks of infectious agents from research and industrial laboratories; wastes from the production of biologicals; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate, and mix cultures.

(2) Human pathological waste, including tissues, organs, and body parts and body fluids that are removed during surgery or autopsy, or other medical procedures, and specimens of body fluids and their containers.

(3) Human blood and blood products including:
(i) Liquid waste human blood;
(ii) Products of blood;
(iii) Items saturated and/or dripping with human blood; or
(iv) Items that were saturated and/or dripping with human blood that are now caked with dried human blood; including serum, plasma, and other blood components, and their containers, which were used or intended for use in either patient care, testing and laboratory analysis or the development of pharmaceuticals. Intravenous bags are also include in this category.

(4) Sharps that have been used in animal or human patient care or treatment or in medical, research, or industrial laboratories, including hypodermic needles, syringes (with or without the attached needle), pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, and culture dishes (regardless of presence of infectious agents). Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips.

(5) Animal waste including contaminated animal carcasses, body parts, and bedding of animals that were known to have been exposed to infectious agents during research (including research in veterinary hospitals), production of biologicals or testing of pharmaceuticals.

(6) Isolation wastes including biological waste and discarded materials contaminated with blood, excretions, exudates, or secretions from humans who are isolated to protect others from certain highly communicable diseases, or isolated animals known to be infected with highly communicable diseases.

(7) Unused sharps including the following unused, discarded sharps: hypodermic needles, suture needles, syringes, and scalpel blades."

A condition will be placed on the permit stating that "medical/infectious waste" as defined in 40 CFR 62.14490 shall not be burned in the unit to ensure that the requirements of this subpart are not triggered.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
UCI submitted the Form 400-CEQA California Environmental Quality Act (CEQA) Applicability and indicated in Section C that there were no impacts which may trigger CEQA.

REGULATION XXX – TITLE V PERMITS
UCI is a Title V facility with a Title V permit

RULE 3003 – APPLICATIONS
The "de minimis significant permit revision" is expected to comply with all applicable requirements of this rule.

(i)(4) The de minimis significant permit revision will be issued only after the permit revision application has been found to comply with all conditions of this rule.

(j)(1) The permit revision will be forwarded to EPA for a 45 day review period.

RULE 3005 – PERMIT REVISION
(e) The proposed Title V permit revision satisfies all the applicable conditions listed in this rule. The modification constitutes a "de minimis significant permit revision" as defined in Rule 3000(b)(6).

RULE 3006 – PUBLIC PARTICIPATION
(b) The proposed "de minimis significant permit revision" is exempt from public participation.

RECOMMENDATION(S)
Following the EPA review period, issue a new Section D with the following permit conditions for the proposed equipment.

PERMIT CONDITIONS

1. OPERATION OF THIS EQUIPMENT MUST BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
   [RULE 204]

2. THIS EQUIPMENT MUST BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
   [RULE 204]

3. THIS EQUIPMENT SHALL BE USED ONLY TO CREMATE HUMAN ANATOMICAL PARTS OR WHOLE BODIES.
   [RULE 1401]

4. THIS EQUIPMENT SHALL NOT BURN MEDICAL/INFECTIOUS WASTE, AS DEFINED IN 40 CFR 62.14490.
[40 CFR SUBPART Ec]

5. THIS EQUIPMENT SHALL NOT BURN ANY CHLORINATED MATERIALS, INCLUDING BUT NOT LIMITED TO PLASTICS, PACKAGING, TEXTILES, FABRIC, CONTAINERS, TUBING OR ANY OTHER GENERAL REFUSE THAT MAY CONTAIN, OR MAY BE CONTAMINATED WITH, CHLORINATED COMPOUNDS.
[RULE 1401]

6. THE MAXIMUM THROUGHPUT OF THE CREMATORY SHALL NOT EXCEED 5,000 POUNDS OF HUMAN ANATOMICAL PARTS AND WHOLE BODIES IN ANY ONE CALENDAR MONTH.
[RULE 1401]

7. THE CREMATORY SHALL EMIT NO MORE THAN 60 PPM OF OXIDES OF NITROGEN (NOX) CALCULATED AS NO2, MEASURED BY VOLUME ON A DRY BASIS AT 3% OXYGEN AND AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES.
[RULE 1147]

8. THE CREMATORY SHALL EMIT NO MORE THAN 2000 PPM OF CARBON MONOXIDE (CO), MEASURED BY VOLUME ON A DRY BASIS AT 3% OXYGEN AND AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES.
[RULE 407]

9. THE CREMATORY SHALL EMIT NO MORE THAN 0.1 GR/SCF OF PARTICULATE MATTER (PM), CALCULATED TO 12% CARBON DIOXIDE AND AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES.
[RULE 409]

10. THE OPERATOR SHALL PERFORM COMBUSTION SYSTEM MAINTENANCE IN ACCORDANCE WITH THE MANUFACTURER'S SCHEDULE AND SPECIFICATIONS. A COPY OF THE MANUFACTURER'S, DISTRIBUTOR'S, INSTALLER'S OR MAINTENANCE COMPANY'S WRITTEN MAINTENANCE SCHEDULE AND INSTRUCTIONS MUST BE MAINTAINED ON SITE.
[RULE 1147]

11. THE SECONDARY CHAMBER BURNER SHALL BE USED THROUGHOUT THE PREHEATING AND CREMATION CYCLE.
[RULE 1303 (a)-BACT]

12. A TEMPERATURE OF NOT LESS THAN 1500 DEGREES FAHRENHEIT SHALL BE MAINTAINED IN THE SECONDARY CHAMBER WHEN THE PRIMARY CHAMBER IS IN OPERATION.
[RULE 1303 (a)-BACT]

13. A TEMPERATURE INDICATING AND RECORDING DEVICE SHALL BE INSTALLED AND MAINTAINED IN THE SECONDARY CHAMBER.
[RULE 1303 (a)-BACT]

14. THE TEMPERATURE INDICATING AND RECORDING DEVICE LOCATED IN THE SECONDARY CHAMBER SHALL MEASURE THE TEMPERATURE ON A CONTINUOUS BASIS.

B. TAKE CORRECTIVE ACTION(S) THAT ELIMINATES THE VISIBLE EMISSIONS WITHIN 24 HOURS AND REPORT THE VISIBLE EMISSIONS AS A POTENTIAL DEVIATION IN ACCORDANCE WITH THE REPORTING REQUIREMENTS IN SECTION K OF THIS PERMIT; OR

C. HAVE A CARB-CERTIFIED SMOKE READER DETERMINE COMPLIANCE WITH THE OPACITY STANDARD, USING EPA METHOD 9 OR THE PROCEDURES IN THE CARB MANUAL "VISIBLE EMISSION EVALUATION", WITHIN THREE BUSINESS DAYS AND REPORT ANY DEVIATIONS TO AQMD.

THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

D. STACK OR EMISSION POINT IDENTIFICATION;

E. DESCRIPTION OF ANY CORRECTIVE ACTIONS TAKEN TO ABATE VISIBLE EMISSIONS;

F. DATE AND TIME VISIBLE EMISSION WAS ABATED; AND

G. VISIBLE EMISSION OBSERVATION RECORDED BY A CERTIFIED SMOKE READER. [RULE 3004 (a)(4)]

Emissions And Requirements:

22. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

NOX: 60 PPM, RULE 1147
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS
PM: 0.1 GR/SCF, RULE 409
PM: 0.1 GR/SCF RULE 473
CO: 2000 PPMV, RULE 407

FACILITY PERMIT TO OPERATE
UNIV CAL IRVINE (NSR USE ONLY)

PERMIT TO CONSTRUCT

A/N 526399

Equipment Description:

CREMATORY, AMERICAN CREMATORY, MODEL A-200HT, WITH A 500,000 BTU PER HOUR, NATURAL GAS FIRED, ECLIPSE THERMJET, MODEL, TJ0050, PRIMARY BURNER, A 1,000,000 BTU PER HOUR, NATURAL GAS FIRED, ECLIPSE THERMJET, MODEL, TJ0100, SECONDARY CHAMBER BURNER, AND A 5 H.P. COMBUSTION AIR BLOWER.

Conditions:

1. OPERATION OF THIS EQUIPMENT MUST BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]

2. THIS EQUIPMENT MUST BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]

3. THIS EQUIPMENT SHALL BE USED ONLY TO CREMATE HUMAN ANATOMICAL PARTS OR WHOLE BODIES.
[RULE 1401]

4. THIS EQUIPMENT SHALL NOT BURN MEDICAL/INFECTIOUS WASTE, AS DEFINED IN 40 CFR 62.14490.
[40 CFR SUBPART Ec]

5. THIS EQUIPMENT SHALL NOT BURN ANY CHLORINATED MATERIALS, INCLUDING BUT NOT LIMITED TO PLASTICS, PACKAGING, TEXTILES, FABRIC, CONTAINERS, TUBING OR ANY OTHER GENERAL REFUSE THAT MAY CONTAIN, OR MAY BE CONTAMINATED WITH, CHLORINATED COMPOUNDS.
[RULE 1401]

6. THE MAXIMUM THROUGHPUT OF THE CREMATORY SHALL NOT EXCEED 5,000 POUNDS OF HUMAN ANATOMICAL PARTS AND WHOLE BODIES IN ANY ONE CALENDAR MONTH.
[RULE 1401]

7. THE CREMATORY SHALL EMIT NO MORE THAN 60 PPM OF OXIDES OF NITROGEN (NOX) CALCULATED AS NO2, MEASURED BY VOLUME ON A DRY BASIS AT 3% OXYGEN AND AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES.
[RULE 1147]

FACILITY PERMIT TO OPERATE
UNIV CAL IRVINE (NSR USE ONLY)

8. THE CREMATORY SHALL EMIT NO MORE THAN 2000 PPM OF CARBON MONOXIDE (CO), MEASURED BY VOLUME ON A DRY BASIS AT 3% OXYGEN AND AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES.
[RULE 407]

9. THE CREMATORY SHALL EMIT NO MORE THAN 0.1 GR/SCF OF PARTICULATE MATTER (PM), CALCULATED TO 12% CARBON DIOXIDE AND AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES.
[RULE 409]

10. THE OPERATOR SHALL PERFORM COMBUSTION SYSTEM MAINTENANCE IN ACCORDANCE WITH THE MANUFACTURER'S SCHEDULE AND SPECIFICATIONS. A COPY OF THE MANUFACTURER'S, DISTRIBUTOR'S, INSTALLER'S OR MAINTENANCE COMPANY'S WRITTEN MAINTENANCE SCHEDULE AND INSTRUCTIONS MUST BE MAINTAINED ON SITE.
[RULE 1147]

11. THE SECONDARY CHAMBER BURNER SHALL BE USED THROUGHOUT THE PREHEATING AND CREMATION CYCLE.
[RULE 1303 (a)-BACT]

12. A TEMPERATURE OF NOT LESS THAN 1500 DEGREES FAHRENHEIT SHALL BE MAINTAINED IN THE SECONDARY CHAMBER WHEN THE PRIMARY CHAMBER IS IN OPERATION.
[RULE 1303 (a)-BACT]

13. A TEMPERATURE INDICATING AND RECORDING DEVICE SHALL BE INSTALLED AND MAINTAINED IN THE SECONDARY CHAMBER.
[RULE 1303 (a)-BACT]

14. THE TEMPERATURE INDICATING AND RECORDING DEVICE LOCATED IN THE SECONDARY CHAMBER SHALL MEASURE THE TEMPERATURE ON A CONTINUOUS BASIS. THE INSTRUMENT SHALL BE CALIBRATED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS ON AN ANNUAL BASIS.
[RULE 1303 (a)-BACT]

15. THE MODEL NUMBER AND RATED HEAT INPUT CAPACITY SHALL BE DISPLAYED ON A PERMANENT RATING PLATE AT AN ACCESSIBLE LOCATION.
[RULE 1147]

16. THE OPERATOR SHALL MEASURE AND RECORD THE WEIGHT OF EACH CHARGE OF HUMAN ANATOMICAL PARTS AND BODIES PRIOR TO INCINERATION.
[RULE 1401]

17. THE OPERATOR SHALL KEEP RECORDS IN A MANNER APPROVED BY THE DISTRICT FOR THE FOLLOWING PARAMETERS OR ITEMS:

    A. MASS OF HUMAN ANATOMICAL PARTS AND BODIES INCINERATED.

    B. NAME AND CONTACT INFORMATION OF PERSONNEL OPERATING THE CREMATORY.

    D. CALIBRATION RECORDS FOR TEMPERATURE MONITORING DEVICE.

FACILITY PERMIT TO OPERATE
UNIV CAL IRVINE (NSR USE ONLY)

E. MAINTENANCE RECORDS.

RECORDS SHALL BE RETAINED FOR A PERIOD OF FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.
[RULE 1147, RULE 1401]

18. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL CONDUCT SOURCE TESTS ON THE EQUIPMENT UNDER THE FOLLOWING CONDITIONS:

A. SOURCE TEST PROTOCOL SHALL BE SUBMITTED AT LEAST 90 DAYS PRIOR TO THE TEST FOR THE EXECUTIVE OFFICER'S REVIEW AND APPROVAL PRIOR TO COMMENCEMENT OF TESTING.

B. SOURCE TESTING SHALL BE CONDUCTED WITHIN 30 DAYS AFTER ACHIEVING MAXIMUM OPERATING CONDITIONS, BUT NO LATER THAN 180 DAYS AFTER INITIAL START-UP.

C. THE SOURCE TESTS SHALL BE PERFORMED TO VERIFY COMPLIANCE WITH THE NOX, CO AND PM EMISSION LIMITS SPECIFIED IN CONDITION NOS. 7, 8, AND 9.

D. THE TESTS SHALL BE PERFORMED WHEN THE CREMATORY IS OPERATING AT THE MAXIMUM HEAT INPUT RANGE AT WHICH THE UNIT NORMALLY OPERATES.

E. THE AQMD ENGINEER SHALL BE NOTIFED AT LEAST 14 DAYS PRIOR TO TESTING.

F. TWO COMPLETE COPIES OF SOURCE TEST REPORTS (INCLUDE THE APPLICATION NUMBER AND A COPY OF THE PERMIT IN THE REPORT) SHALL BE SUBMITTED TO THE DISTRICT (ADDRESSED TO SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, ATTN: MARCEL SAULIS, P.O. BOX 4941, DIAMOND BAR, CA 91765). THE RESULTS SHALL BE SUBMITTED WITHIN 45 DAYS AFTER THE SOURCE TEST IS COMPLETED. THE REPORT SHALL INCLUDE, BUT NOT BE LIMITED TO EMISSION RATES IN POUNDS PER HOUR AND CONCENTRATIONS IN PPMV AT THE OUTLET OF THE CREMATORY, MEASURED ON A DRY BASIS AT 3% OXYGEN. THE FOLLOWING OPERATING DATA SHALL ALSO BE INCLUDED:

I. THE EXHAUST FLOW RATES IN ACTUAL CUBIC FEET PER MINUTE (ACFM).
II. THE FIRING RATES IN BTU PER HOUR.
III. THE OXYGEN CONTENT OF THE EXHAUST GASES IN PERCENT.
IV. THE FUEL FLOW RATE.

G. A TESTING LABORATORY CERTIFIED BY THE CALIFORNIA AIR RESOURCES BOARD IN THE REQURIED TEST METHODS FOR CRITERIA POLLUTANTS TO BE MEASURED, AND IN COMPLIANCE WITH DISTRICT RULE 304 (NO CONFLICT OF INTEREST) SHALL CONDUCT THE TEST.

H. SAMPLING FACILITIES SHALL COMPLY WITH THE DISTRICT GUIDELINES FOR CONSTRUCTION OF SAMPLING AND TESTING FACILITIES PURSUANT TO RULE 217.
[RULE 1147, RULE 407, RULE 409]

FACILITY PERMIT TO OPERATE
UNIV CAL IRVINE (NSR USE ONLY)

E. MAINTENANCE RECORDS.

RECORDS SHALL BE RETAINED FOR A PERIOD OF FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.
[RULE 1147, RULE 1401]

18. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL CONDUCT SOURCE TESTS ON THE EQUIPMENT UNDER THE FOLLOWING CONDITIONS:

A. SOURCE TEST PROTOCOL SHALL BE SUBMITTED AT LEAST 90 DAYS PRIOR TO THE TEST FOR THE EXECUTIVE OFFICER'S REVIEW AND APPROVAL PRIOR TO COMMENCEMENT OF TESTING.

B. SOURCE TESTING SHALL BE CONDUCTED WITHIN 30 DAYS AFTER ACHIEVING MAXIMUM OPERATING CONDITIONS, BUT NO LATER THAN 180 DAYS AFTER INITIAL START-UP.

C. THE SOURCE TESTS SHALL BE PERFORMED TO VERIFY COMPLIANCE WITH THE NOX, CO AND PM EMISSION LIMITS SPECIFIED IN CONDITION NOS. 7, 8, AND 9.

D. THE TESTS SHALL BE PERFORMED WHEN THE CREMATORY IS OPERATING AT THE MAXIMUM HEAT INPUT RANGE AT WHICH THE UNIT NORMALLY OPERATES.

E. THE AQMD ENGINEER SHALL BE NOTIFED AT LEAST 14 DAYS PRIOR TO TESTING.

F. TWO COMPLETE COPIES OF SOURCE TEST REPORTS (INCLUDE THE APPLICATION NUMBER AND A COPY OF THE PERMIT IN THE REPORT) SHALL BE SUBMITTED TO THE DISTRICT (ADDRESSED TO SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, ATTN: MARCEL SAULIS, P.O. BOX 4941, DIAMOND BAR, CA 91765). THE RESULTS SHALL BE SUBMITTED WITHIN 45 DAYS AFTER THE SOURCE TEST IS COMPLETED. THE REPORT SHALL INCLUDE, BUT NOT BE LIMITED TO EMISSION RATES IN POUNDS PER HOUR AND CONCENTRATIONS IN PPMV AT THE OUTLET OF THE CREMATORY, MEASURED ON A DRY BASIS AT 3% OXYGEN. THE FOLLOWING OPERATING DATA SHALL ALSO BE INCLUDED:

I. THE EXHAUST FLOW RATES IN ACTUAL CUBIC FEET PER MINUTE (ACFM).
II. THE FIRING RATES IN BTU PER HOUR.
III. THE OXYGEN CONTENT OF THE EXHAUST GASES IN PERCENT.
IV. THE FUEL FLOW RATE.

G. A TESTING LABORATORY CERTIFIED BY THE CALIFORNIA AIR RESOURCES BOARD IN THE REQURIED TEST METHODS FOR CRITERIA POLLUTANTS TO BE MEASURED, AND IN COMPLIANCE WITH DISTRICT RULE 304 (NO CONFLICT OF INTEREST) SHALL CONDUCT THE TEST.

H. SAMPLING FACILITIES SHALL COMPLY WITH THE DISTRICT GUIDELINES FOR CONSTRUCTION OF SAMPLING AND TESTING FACILITIES PURSUANT TO RULE 217.
[RULE 1147, RULE 407, RULE 409]

FACILITY PERMIT TO OPERATE
UNIV CAL IRVINE (NSR USE ONLY)

G. VISIBLE EMISSION OBSERVATION RECORDED BY A CERTIFIED SMOKE READER. [RULE 3004 (a)(4)]

Emissions And Requirements:

22. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

NOX: 60 PPM, RULE 1147
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS
PM: 0.1 GR/SCF, RULE 409
PM: 0.1 GR/SCF RULE 473
CO: 2000 PPMV, RULE 407