U.S. Department of Justice
Drug Enforcement Administration

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Microgram Bulletin

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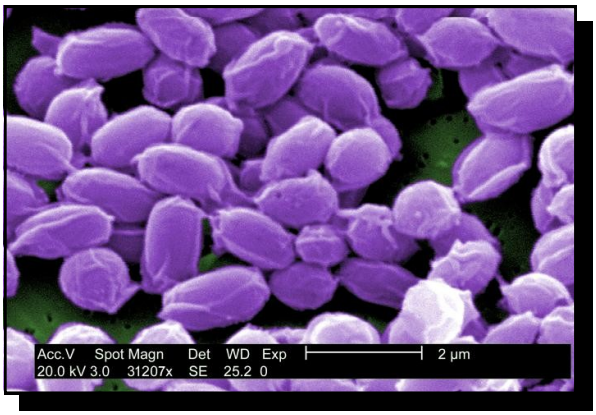
- MARCH 2010 -

– SAFETY ALERT –

EUROPEAN HEROIN POSSIBLY CONTAMINATED WITH ANTHRAX

Recent reports have confirmed a number of cases of anthrax infections in heroin users (26 in Scotland, 3 in England, and 1 in Germany), which have resulted in 11 deaths. The first case was confirmed in December 2009. The Centers for Disease Control and Prevention (CDC) classifies anthrax as a Category A bioterrorism agent (highest priority). There are three types of anthrax: cutaneous (skin), gastrointestinal (digestive), and inhalation (lung). Most cases of cutaneous anthrax are curable. Gastrointestinal anthrax is more serious, and between one-fourth and one-half of cases lead to death. Inhalation anthrax is the most severe form of anthrax. In 2001, about half of the inhalation anthrax cases ended in death. No cases of anthrax infection among heroin users have been reported in the United States at this time.



Anthrax Spores (Courtesy of the CDC)

[Editor's Note: Information regarding anthrax can be obtained from the CDC's anthrax website: www.bt.cdc.gov/agent/anthrax.]

– PROPOSED RULE –

[Editor's Preface: The following notice has been edited for *Microgram Bulletin*. See the Federal Register: February 24, 2010, (Volume 75, Number 36) (Rules and Regulations) (Pages 8287-8292) for the complete text of the proposed rule.]

DEPARTMENT OF JUSTICE

Drug Enforcement Administration

21 CFR Part 1310

[Docket No. DEA-320P] RIN 1117-AB24

Control of Ergocristine, a Chemical Precursor Used in the Illicit Manufacture of Lysergic Acid Diethylamide, as a List I Chemical

AGENCY: Drug Enforcement Administration (DEA), Department of Justice.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Drug Enforcement Administration (DEA) is proposing to control the chemical precursor ergocristine as a List I chemical under the Controlled Substances Act (CSA). Clandestine laboratories are using this chemical as a substitute for the List I chemicals ergotamine and ergonovine to illicitly manufacture the schedule I controlled substance lysergic acid diethylamide (LSD).

If finalized as proposed, handlers of ergocristine would be subject to the chemical regulatory provisions of the CSA and its implementing regulations, including 21 CFR parts 1309, 1310, 1313, and 1316. This rulemaking does not propose the establishment of a threshold for domestic and international transactions of ergocristine. As such, all transactions involving ergocristine, regardless of size, would be regulated. This rulemaking also proposes to specify that chemical mixtures containing ergocristine will not be exempt from regulatory requirements at any concentration. Therefore, all transactions of chemical mixtures containing any quantity of ergocristine would be regulated and subject to control under the CSA if this rule is finalized as proposed.

DATES: Written comments must be postmarked and electronic comments must be submitted on or before April 26, 2010. Commenters should be aware that the electronic Federal Docket Management System will not accept comments after midnight Eastern Time on the last day of the comment period.

ADDRESSES: To ensure proper handling of comments, please reference "Docket No. DEA-320P" on all written and electronic correspondence. Written comments sent via regular or express mail should be sent to Drug Enforcement Administration, Attention: DEA Federal Register Representative/ODL, 8701 Morrissette Drive, Springfield, VA 22152. Comments may be sent to DEA by sending an electronic message to dea.diversion.policy@usdoj.gov. Comments may also be sent electronically through http://www.regulations.gov using the electronic comment form provided on that site. An electronic copy of this document is also available at the http://www.regulations.gov Web site. DEA will accept attachments to electronic comments in Microsoft Word, WordPerfect, Adobe PDF, or Excel file formats only. DEA will not accept any file format other than those specifically listed here.

Please note that DEA is requesting that electronic comments be submitted before midnight Eastern Time on the day the comment period closes because http://www.regulations.gov terminates the public's ability to submit comments at midnight Eastern time on the day the comment period closes. Commenters in time zones other than Eastern Time may want to consider this so that their electronic comments are received. All comments sent via regular or express mail will be considered timely if postmarked on the day the comment period closes.

FOR FURTHER INFORMATION CONTACT: Christine A. Sannerud, PhD, Chief, Drug and Chemical Evaluation Section, Office of Diversion Control, Drug Enforcement Administration, 8701 Morrissette Drive, Springfield, VA 22152; telephone: (202) 307-7183.

SUPPLEMENTARY INFORMATION:

[Editor's Note: See the Federal Register for information regarding the posting of Public Comments.]

Background

Lysergic acid diethylamide (LSD) is a synthetic schedule I hallucinogen. It is the most potent hallucinogen known and only microgram amounts are required to produce overt hallucinations. LSD has been abused for its hallucinogenic properties since the 1960s. It induces a heightened awareness of sensory input that is accompanied by an enhanced sense of clarity, but reduced ability to control what is experienced. The LSD "trip" is composed of perceptual and psychic effects. A user may experience the following perceptual effects: Visual distortion in the size and shape of objects, movements, color, sound, touch, and the user's own body image. The user may report "hearing colors" or "seeing sounds." The psychic effects experienced by the user may include feelings of obtaining true insight, intensified emotions, sudden and dramatic mood swings, impairment of attention, concentration and motivation, distortion of time, and depersonalization.

High doses of LSD can induce a "bad trip" characterized by intense anxiety or panic, confusion, and combative behaviors. After a LSD trip, a user may also experience fatigue, acute anxiety, or depression for 12 to 24 hours. LSD is commonly abused by teenagers and young adults in connection with "raves," nightclubs, and concert settings.

LSD is most commonly found in the form of small squares of paper, called blotter, that are generally decorated with artwork or designs, perforated, soaked in liquid LSD solution, and dried. Each square represents one dose of LSD. There have been some instances of blotter paper being found impregnated with hallucinogens other than LSD. For example, the hallucinogens 2,5-dimethoxyamphetamine (DMA) and 4-bromo-2,5-dimethoxy-amphetamine (DOB) have been found on blotter paper passed off as LSD.

Other forms of LSD include tablets (known as microdots), gelatin squares (known as window pane), and impregnated sugar cubes. LSD has also been available in gel wraps which look like "bubble-wrap" packing material, and are blue in color. LSD is also distributed in liquid form which often is packaged in small bottles typically sold as breath drops. Additionally, LSD has been embedded in candy such as "Gummy Worms," "Sweet Tarts," "Smarties," and "Pez." The most common venues for retail LSD distribution are "raves," dance clubs, and concerts.

According to the National Forensic Laboratory Information System (NFLIS), Federal, State, and local forensic laboratories analyzed 1,785 and 1,368 exhibits of LSD in 2000 and 2001, respectively. In 2002, the number of LSD exhibits dropped dramatically to 198 due to the seizure of a large clandestine LSD laboratory in Kansas. The number of LSD samples analyzed by Federal, State, and local forensic laboratories remained low for 2003 and 2004 with 362 and 338 LSD exhibits, respectively. However, there appears to be a slight increasing trend seen in 2005, 2006 and 2007, with 521, 590, and 844 exhibits reported, respectively. This trend appears to carry over into 2008 since NFLIS data, entered as of December 29, 2008 already documents 839 LSD exhibits.

Control Status

Lysergic acid diethylamide is in schedule I of the CSA (21 U.S.C. 812). LSD precursors, lysergic acid and lysergic acid amide, are both schedule III controlled substances (21 U.S.C. 812(b)). The LSD precursors ergotamine and ergonovine are regulated as List I chemicals under the CSA.

Illicit Production of LSD

LSD has been manufactured illegally since the 1960s. A limited number of chemists, probably less than a dozen, are believed to be manufacturing nearly all of the LSD available in the United States. Clandestine laboratory operators must adhere to precise and complex production procedures, and production of LSD is relatively difficult.

LSD has historically been produced from lysergic acid, which is made from ergotamine or ergonovine, substances derived from an ergot fungus on rye, or from lysergic acid amide, a chemical found in morning glory seeds. Although theoretically possible, manufacture of LSD from morning glory seeds is not economically feasible and these seeds never have been found to be a successful starting material for LSD production. The List I chemicals ergotamine and ergonovine are not widely available in the United States, and their purchase by other than established pharmaceutical firms is suspect. Therefore, ergotamine and/ or ergonovine used in clandestine LSD

laboratories are believed to have been acquired from sources located abroad. Only a small amount of ergotamine or ergonovine is required to produce LSD in large batches. For example, 25 kilograms of ergotamine tartrate can produce five or six kilograms of pure LSD crystal that, under ideal circumstances, could be processed into 100 million dosage units. Thus, clandestine LSD manufacturers need import only a small quantity of precursor material.

Movement to Ergocristine as LSD Precursor and Largest LSD Laboratory Ever Seized by DEA
Because of the existing CSA regulatory controls on the LSD precursors lysergic acid, lysergic acid amide, ergotamine, and ergonovine, clandestine laboratory operators have sought uncontrolled sources of precursor material for the production of LSD. This has led to the illicit utilization of the precursor chemical ergocristine as a direct substitute for ergotamine and ergonovine for the illicit production of LSD. In fact, the largest clandestine LSD laboratory ever seized by DEA utilized ergocristine as the LSD precursor. Recipes documenting procedures for utilizing ergocristine in LSD synthesis are easily found on the Internet.

In late 2000, in the largest clandestine LSD laboratory seizure ever made by the DEA, agents seized approximately 41.3 kilograms (90.86 pounds) of LSD, manufactured in a clandestine laboratory set up in a missile silo near Wamego, Kansas. On November 6, 2000, two clandestine laboratory operators were moving the illegal laboratory when they were arrested. The clandestine laboratory operators utilized the chemical ergocristine as the unregulated source of precursor material for the production of the LSD. A total of 19 kilograms of ergocristine was seized. According to court testimony, the two defendants previously clandestinely manufactured LSD in Santa Fe, New Mexico, where every five weeks the clandestine laboratory produced about 2.2 pounds of LSD, approximately 10 million doses that cost less than one cent a dose to produce and would sell for as much as $10 a dose. According to court testimony, the LSD was shipped to California and later to Europe for distribution.

The El Paso Intelligence Center's National Seizure System data show that five clandestine LSD laboratories have been seized since 2001. According to law enforcement reporting, the seized laboratories were operated by a small number of experienced chemists and were of limited capacity: three of which produced less than two ounces, and two of which produced between two and eight ounces per batch.

Availability of the Precursor Chemical
DEA has determined that ergocristine is readily available from commercial chemical suppliers. DEA has identified at least three suppliers of ergocristine, of which one distributor is located domestically; the other two are based in Germany and the Czech Republic. The ergocristine used by the clandestine laboratory operator arrested in conjunction with the November 2000, clandestine LSD laboratory in Wamego, Kansas, was obtained through a chemical supplier in Germany who obtained the ergocristine from a chemical source firm operating out of the Czech Republic.

In the 2005 International Narcotics Control Board (INCB) report titled "Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances," the INCB reported that in response to Czech authorities expression of concern over orders for ergocristine, INCB scrutiny over such shipments led to the one kilogram seizure of ergocristine by Panamanian authorities in early 2005. The INCB further reported that following the seizure, a further order was received from the Netherlands Antilles. The shipment of ergocristine was followed and a clandestine LSD laboratory identified. In that report, the INCB urged governments to exercise vigilance in regard to shipments of ergot alkaloids (such as ergocristine) and related substitutes not under international control.

This rule proposes the addition of both domestic and import/export controls on ergocristine (and its salts). Such controls are deemed necessary for law enforcement to identify domestic and international transactions in ergocristine, due to growing concerns regarding its use for the illicit manufacture of LSD.

Regulation of Ergocristine as a List I Chemical
The CSA, specifically 21 U.S.C. 802(34) and 21 U.S.C. 802(35), and its implementing regulations at 21 CFR 1310.02(c), provide the Attorney General with the authority to specify, by regulation, additional chemicals as "listed chemicals" if they are used in the manufacture of a controlled substance in violation of the CSA, and are important to the manufacture of the controlled substance. Ergocristine is being used in clandestine laboratories as the precursor material for the illicit manufacture of the schedule I controlled substance LSD. This rule proposes the regulation of ergocristine as a List I chemical because DEA finds that it is used in the illicit manufacture of the controlled substance LSD and is important to the illicit manufacture of the controlled substance LSD.

If finalized as proposed, handlers of ergocristine will become subject to the chemical regulatory provisions of the CSA, including 21 CFR parts 1309, 1310, 1313, and 1316. This rulemaking does not propose the establishment of a threshold for domestic and import transactions of ergocristine pursuant to the provisions of 21 CFR 1310.04 (g). Due to the high potency of LSD, even a single gram (i.e., 1/28th of an ounce) of ergocristine can be used illicitly to make thousands of dosage units of LSD. Therefore, DEA is proposing that all ergocristine transactions, regardless of size, shall be regulated transactions as defined in 21 CFR 1300.02(b)(28). As such, if finalized as proposed, all ergocristine transactions will be subject to recordkeeping, annual manufacturer reporting of inventory and use data, import/export controls, and other CSA chemical regulatory requirements.

Chemical Mixtures Containing Ergocristine

This rulemaking also proposes that chemical mixtures containing ergocristine not be exempt from regulatory requirements at any concentration, unless an application for exemption of a chemical mixture is submitted by an ergocristine manufacturer and the application is reviewed and accepted by DEA under 21 CFR 1310.13 (Exemption by Application Process). Since even a small amount of ergocristine is able to make a significant amount of LSD, the control of chemical mixtures containing any amount of ergocristine is necessary to prevent the illicit extraction, isolation, and use of the ergocristine. Therefore, all chemical mixtures containing any quantity of ergocristine will be subject to CSA control, if this rule is finalized as proposed, unless the ergocristine manufacturer is granted an exemption by the application process discussed below. If finalized, this proposed rule will modify the Table of Concentration Limits in 21 CFR 1310.12(c) to reflect the fact that chemical mixtures containing any amount of ergocristine are subject to CSA chemical control provisions.

[Editor's Note: See the Federal Register for information regarding the Exemption by Application Process, Requirements for Handling List I Chemicals, and Regulatory Certifications.]

For the reasons set out above, 21 CFR part 1310 is proposed to be amended as follows:

PART 1310--RECORDS AND REPORTS OF LISTED CHEMICALS AND CERTAIN MACHINES

1. The authority citation for part 1310 continues to read as follows:

Authority: 21 U.S.C. 802, 827(h), 830, 871(b), 890.

2. Section 1310.02 is amended by adding a new paragraph (a)(30) to read as follows:

Sec. 1310.02 Substances covered.
* * * * * (a)
* * *
(30) Ergocristine and its salts 8612
* * * * *

3. Section 1310.04 is amended by redesignating paragraphs (g)(1)(ii) through (g)(1)(vii) as paragraphs (g)(1)(iii) through (g)(1)(viii), and adding a new paragraph (g)(1)(ii) to read as follows:

Sec. 1310.04 Maintenance of records.
* * * * *
(g)* * *
(1) * * *
(ii) Ergocristine and its salts
* * * * *

4. Section 1310.09 is amended by adding new paragraph (k) to read as follows:

Sec. 1310.09 Temporary exemption from registration.
* * * * *
(k)(1) Each person required under Sections 302 and 1007 of the Act (21 U.S.C. 822, 957) to obtain a registration to manufacture, distribute, import, or export regulated ergocristine and its salts, including regulated chemical mixtures pursuant to Section 1310.12 of this part, is temporarily exempted from the registration requirement, provided that DEA receives a properly completed application for registration or application for exemption for a chemical mixture containing ergocristine and its salts pursuant to Section 1310.13 of this part on or before (30 days after publication of a Final Rule implementing regulations regarding ergocristine). The exemption will remain in effect for each person who has made such

application until the Administration has approved or denied that application. This exemption applies only to registration; all other chemical control requirements set forth in the Act and parts 1309, 1310, 1313, and 1316 of this chapter remain in full force and effect.

(2) Any person who manufactures, distributes, imports or exports a chemical mixture containing ergocristine and its salts whose application for exemption is subsequently denied by DEA must obtain a registration with DEA. A temporary exemption from the registration requirement will also be provided for those persons whose applications for exemption are denied, provided that DEA receives a properly completed application for registration on or before 30 days following the date of official DEA notification that the application for exemption has been denied. The temporary exemption for such persons will remain in effect until DEA takes final action on their registration application.

5. Section 1310.12(c) is amended by adding in alphabetical order an entry "Ergocristine and its salts" in the table "Table of Concentration Limits" to read as follows:

Sec. 1310.12 Exempt chemical mixtures.

Table of Concentration Limits

	DEA chemical Code Number	Concentration	Special Conditions
List I Chemicals			
Ergocristine and its salts	8612	Not Exempt at any concentration.	Chemical mixtures containing an amount of ergocristine and its salts are not exempt.

Dated: February 12, 2010.

Michele M. Leonhart,
Deputy Administrator.

[FR Doc. 2010-3701 Filed 2-23-10; 8:45 am]
BILLING CODE 4410-09-P

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SELECTED REFERENCES

[The Selected References section is a compilation of recent publications of presumed interest to forensic chemists. Unless otherwise stated, all listed citations are published in English. Abbreviated mailing address information duplicates that provided by the abstracting service. Patents and Proceedings are reported only by their *Chemical Abstracts* citation number.]

1. Abdel-Hay KM, Awad T, DeRuiter J, Clark CR. **Differentiation of methylenedioxybenzylpiperazines (MDBP) by GC/IRD and GC/MS.** Forensic Science International 2010;195(1-3):78-85. [Editor's Notes: Presents title study. Contact: Department of Pharmacal Sciences, Harrison School of Pharmacy, Auburn University, Auburn, AL 36849, USA.]

2. Chappell JS, Lee MM. **Cathinone preservation in khat evidence via drying.** Forensic Science International 2010;195(1-3):108-120. [Editor's Note: The primary concern with the forensic analysis of the khat plant (Catha edulis) has been the need to preserve the cathinone, which converts to cathine, after harvesting. A common misconception is that cathinone is highly unstable once the plant is harvested, and may

be undetectable upon drying and prolonged storage. However, drying the plant material will preserve cathinone. This study has shown that cathinone persists in dried khat for a time frame of several years, and that simple drying techniques are an effective means to preserve seized khat evidence for long-term storage. Contact: Drug Enforcement Administration, 390 Main Street, Western Laboratory, Room 700, San Francisco, CA 94105, USA.]

3. Kocak A, De Cotiis LM, Hoffman DB. **Comparative study of ATR and transflection IR spectroscopic techniques for the analysis of hallucinogenic mushrooms.** Forensic Science International 2010;195(1-3):36-41. [Editor's Notes: Presents title study. Contact: John Jay College of Criminal Justice, The City University of New York, Department of Sciences, 445 W 59th Street, New York, NY 10019, USA.]

4. Laussmann T, Meier-Giebing S. **Forensic analysis of hallucinogenic mushrooms and khat (Catha edulis) using cation-exchange liquid chromatography.** Forensic Science International 2010;195(1-3):160-164. [Editor's Notes: Presents title study. Contact: Centre for Education and Science of the Federal Finance Administration, Customs Laboratory Cologne, Merianstrasse 110, Cologne 50765, Germany.]

Additional References of Possible Interest:

1. Blackmore D, Li J, Ebrahimi D, Collins M, Vujic S, Gavoyannis P. **A probabilistic approach to heroin signatures.** Analytical and Bioanalytical Chemistry 2010;396 (2):765-773. [Editor's Notes: The application of the Bayes Theorem to the determination of the geographic origin of heroin signature samples is presented. The analysis of 2549 heroin sample seized at Australia's borders are used to illustrate the method. The results obtained using this methodology are compared to simple HS1 ratio approaches for assigning geographic origin. Contact: School of Chemistry, University of New South Wales, Sydney 2052, Australia.]

2. Daeid NN, Buchanan HAS, Savage KA, Fraser JG, Cresswell SL. **Recent advances in the application of stable isotope ratio analysis in forensic chemistry.** Australian Journal of Chemistry 2010;63(1):3-7. [Editor's Notes: This review article presents the developing use of stable isotope ratio analysis in forensic science. Recent advances in the analysis of drug samples, explosive materials, and other samples are discussed. Contact: Centre for Forensic Science, Department of Pure and Applied Chemistry, University of Strathclyde, Glasgow G1 1XW.]

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The Journal/Textbook Collection Exchange is a service intended to facilitate the transfer of unwanted journals and textbooks to forensic libraries or other *Microgram* subscribers. The current donations are listed below. The offers are First Come/First Serve (except **libraries have preference**). There are no charges to the requestor. Please provide a full mailing address in the request. **Important!:** Do not provide an address that irradiates mail!

Federal Criminal Code and Rules –2008 Edition (12 copies)

All subscribers are encouraged to donate surplus or unwanted items/collections. Reference texts and long runs of forensic/analytical journals are of particular interest; however, even single issues are worthwhile, and may fill a hole in an existing collection. If interested, please consult the *Microgram* website or contact the *Microgram* Editor for further instructions.

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EMPLOYMENT OPPORTUNITIES

Position: Forensic Chemist
Location: DEA Laboratories in: Largo, MD; Chicago, IL; New York, NY; Dallas, TX; Miami, FL; Vista, CA; Sterling, VA; and San Francisco, CA.
Announcement Number: F-DEA-LABS-10-0367-DEU
Salary: $35,675 - $105,897 depending on experience
Application Deadline: April 30, 2010

Duties: Performs analyses on drug evidence and interprets data to detect, identify, and quantitate controlled substances. Determines the identity and/or concentration of adulterants and diluents, which meet established thresholds. Renders expert testimony on own work in Federal, State, or local courts. Assists prosecuting attorneys in the preparation of technical aspects of a case. As directed or requested provides advice and/or assistance in the performance of enforcement activities such as clandestine laboratory seizures and vacuum sweep searches for controlled substances. Operates various analytical instrumentation such as HPLC, GC/FID, GC/MS, UV/VIS. When necessary revises and develops procedures to accomplish the analyses of complex drug mixtures or trace quantities of particular substances. Writes laboratory reports which describe all tests performed, calculations, and conclusions.

General Requirements: A. Applicants must show successful completion of a full four-year college course of study in an accredited college or university leading to a bachelor's or higher degree in physical sciences, life sciences, or engineering that included 30 semester hours in chemistry, supplemented by course work in mathematics through differential and integral calculus, and at least 6 semester hours of physics. -OR- B. An appropriate combination of education and experience with course work equivalent to a major as shown in A above, including 30 semester hours in chemistry, supplemented by mathematics through differential and integral calculus, and at least 6 semester hours of physics, plus appropriate experience or additional education.

How to Apply: See Vacancy Announcement at www.usajobs.gov

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THE DEA FY 2010 STATE AND LOCAL FORENSIC CHEMISTS SEMINAR SCHEDULE

The FY 2010 schedule for the State and Local Forensic Chemists Seminar is as follows:

June 21-25, 2010
September 13-17, 2010

The school is open only to forensic chemists working for law enforcement agencies. It is intended for chemists who have completed their agency's internal training program and have also been working on the bench for at least one year. There is no tuition charge. The course is held at the Hyatt Place Dulles North Hotel in Sterling, Virginia (near the Washington/Dulles International Airport). A copy of the application form is reproduced on the last page of this issue of *Microgram Bulletin*. Completed applications should be mailed to the Special Testing and Research Laboratory (Attention: J. Head) at 22624 Dulles Summit Court, Dulles, VA 20166.

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SCIENTIFIC MEETINGS

Title: 2010 Mid-Atlantic Association of Forensic Scientists Annual Meeting
Sponsoring Organization: Mid-Atlantic Association of Forensic Scientists
Inclusive Dates: May 17-21, 2010
Location: Penn State University (State College, PA)
Contact Information: maafs@comcast.net
Website: www.maafs.org

DEA State and Local Forensic Chemist Seminar Application

Name: (PRINT NAME EXACTLY AS IT IS TO APPEAR ON CERTIFICATE)	Title:

Employer:

Your Office Mailing Address (include city, state, and zipcode):	Length of Service:

Business Telephone: ( ) -	Business Fax: ( ) -	Date of Application:

Email Address:

Education

College or University	Degree	Major

Please Check Which Techniques or Equipment Are Used in Your Laboratory

	Color Tests		UV
	Column Chromatography		IR
	Microcrystal Tests		CE
	Thin Layer Chromatography		GC/MS
	GC		IR
	HPLC		Other (please specify)

Indicate Analytical Problem(s) Nominee Would Like to Have Covered:

Choice of Seminar Dates:
1st Choice: Second Choice:

Laboratory Chief/Director:

Printed Name:_____ Signature: _____

Title: _____ Date: _____

Phone: _____