

Microgram

Bulletin

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JULY 2005

- INTELLIGENCE ALERT -

COCAINE IN A BOOK LINING IN HUELVA PROVINCE, SPAIN

The Stupeficient Control Laboratory of the Health Department (Area de Sanidad) in Seville, Spain recently received a large book containing 96 black colored plastic squares concealed within the front and back covers, each containing an off-white powder, suspected cocaine (see Photo 1, right, and Photo 2, next page). The book was seized by the Guardia Civil/Anti-Narcotics Enforcement Department from normal mail in Huelva Province (southwest Spain). The origin of the mailing was not reported. Analysis of the powder (total net mass 247 grams) by color testing and GC/FID confirmed 38.6 percent cocaine hydrochloride. This was the first submission of this type to the laboratory.

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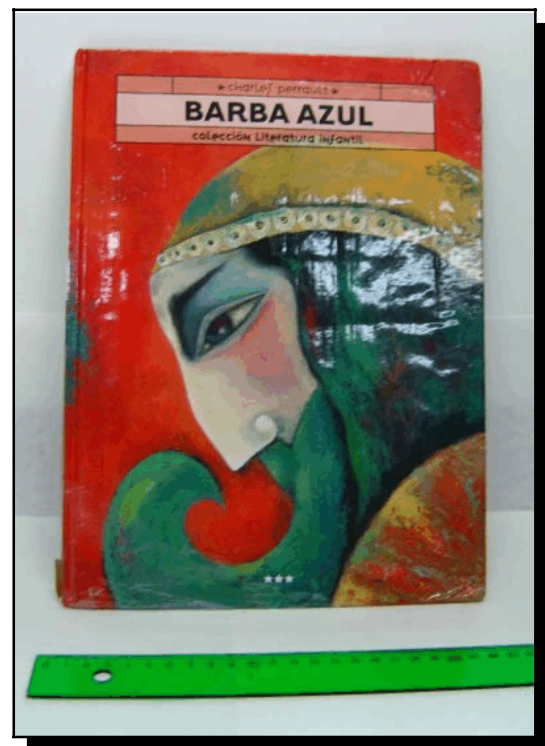


Photo 1



Photo 2

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- INTELLIGENCE ALERT -

***MARRUBIUM VULGARE* (WHITE HOREHOUND) SUBMITTED AS
SUSPECTED MARIJUANA IN SAN FRANCISCO, CALIFORNIA**

The DEA Western Laboratory (San Francisco, California) recently received a professionally labelled plastic cylinder filled with a dry, green plant material, suspected marijuana (see Photo 3, below, and Photos 4 and 5, next page). The exhibit was submitted by the U.S. Marshals Service (San Francisco), and was originally mailed to a U.S. District Court Judge by a former civil



Photo 3



Photo 4



Photo 5

litigant, along with a personal note and a copy of a well known, drug use-promoting newspaper/magazine. The plastic cylinder measured approximately 9 x 1 inches, and was labelled as “Skyscraper” by “International Oddities”. Initial gross examination indicated that the plant material (total net mass 13.0 grams) superficially resembled marijuana, but without the expected characteristic and distinctive odor. Microscopic examination showed fine white hairs (resembling clothing hairs) on all parts of the material (both sides of leaves, stems, etc.), but no cystolithic hairs. Analysis of petroleum ether extracts by TLC and GC/MS were negative for Δ^9 -THC. Further analysis of a chloroform:methanol (4:1) extract by GC/MS indicated marrubiin (not confirmed due to the lack of a reference standard), the principal component in *Marrubium vulgare* (also known as White Horehound). Internet research indicated that this material is being marketed as a “tobacco alternative”; however, the company’s website descriptions clearly imply that it and similar products are actually legal marijuana alternatives. *Marrubium vulgare* is not controlled, and is not believed to have any abuse potential; it is a traditional (now minor) herb touted as a botanical home remedy as an expectorant, for relief of bronchitis, “chest tightness”, and similar maladies. This is believed to be the first such submission to the Western Laboratory.

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- INTELLIGENCE ALERT -

**TOTE-BAG HANDLES FROM BOGOTA (CONTAINING HEROIN)
IN MIAMI, FLORIDA**

The DEA North Central Laboratory (Chicago, Illinois) recently received 58 tote-bag handles, each containing a light tan colored powder, suspected heroin (see Photo 6, next page (displayed

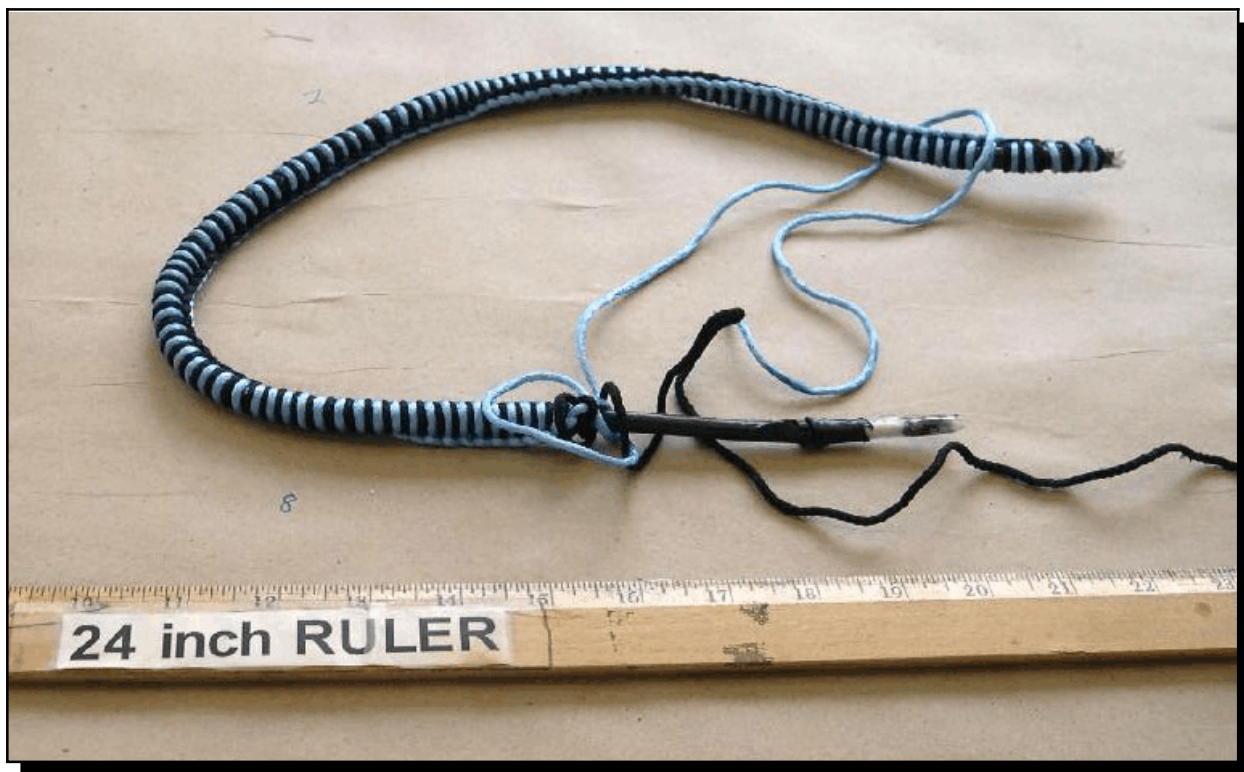


Photo 6

oversize to show detail)). The tote-bags originated in Bogota, Colombia, and were seized at the Bureau of Immigration and Customs Enforcement (BICE) mail screening facility in Miami, then submitted to the North Central Laboratory after being forwarded to Detroit, Michigan (possibly for an attempted controlled delivery; actual circumstances of final seizure not reported). The handles (two per bag) had been removed from the tote-bags prior to their submission; the (large) tote-bags themselves were determined to have contained no controlled substances. The powder was contained in plastic tubes, which were further wrapped in black plastic electrical tape, that were in turn wrapped in a braided yarn cover (see the unwrapped (lower) end in Photo 6; note that the yarn colors varied from handle to handle). Analysis of the powder (total net mass 422 grams) by GC, GC/MS, and FTIR confirmed 81 percent heroin hydrochloride. This is the first known submission of this kind in the United States, and no others have been reported since this initial seizure.

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- INTELLIGENCE ALERT -

**QUILTED UNISEX GARMENTS FROM GHANA (CONTAINING HEROIN)
AT WASHINGTON/DULLES AIRPORT, VIRGINIA**

The DEA Mid-Atlantic Laboratory (Largo, Maryland) recently received a submission of 25 unisex garments with quilted linings in their front panels containing a tan powder within the quilts, suspected heroin (see Photos 7 - 9, next page). The garments were seized by the United



Photo 7



Photo 8

States Customs Service at the Washington-Dulles International Airport from luggage on a flight that originated from Ghana, Africa. Analysis of the powder (total net mass 4,880 grams) by GC/FID, GC/MS, and FTIR confirmed 47 percent heroin hydrochloride, acetaminophen, and caffeine. The Mid-Atlantic Laboratory previously received a similar submission, in December, 2004.

[Editor's Comments: A variety of quilted clothing containing controlled substances (primarily heroin), including shirts/blouses, pants, and jackets, has been previously reported in *Microgram* and *Microgram Bulletin*. The heroin was "sandwiched" between layers of plastic within the quilting, which is unusual.]

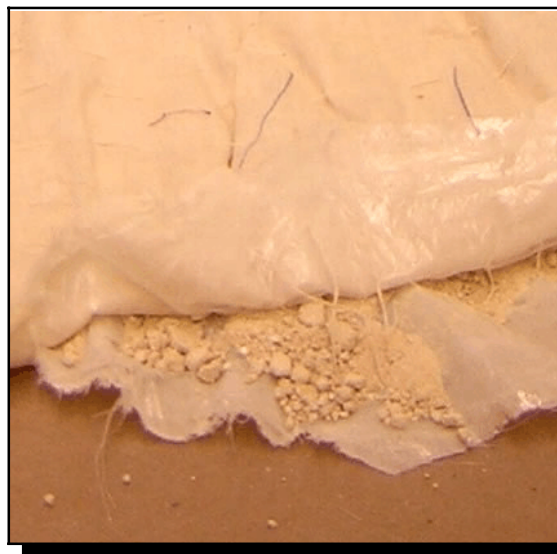


Photo 9

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- INTELLIGENCE BRIEF -

METHAMPHETAMINE SUPERLAB SEIZED NEAR BROWNSVILLE, OREGON

[From the NDIC *Narcotics Digest Weekly* 2005;4(24):1
Unclassified, Reprinted with Permission.]

On May 26, 2005, the Drug Enforcement Administration (DEA) Salem Resident Office Task Force, along with federal, state, and local law enforcement officers, dismantled a super lab located outside Brownsville, a small town situated just east of Interstate 5 between Salem and

Eugene. The laboratory, which had been in operation for approximately 5 months, was located in a modular home on a rural, wooded, 10-acre property. The site had been under law enforcement surveillance for a short period of time. Ninety pounds of pure methamphetamine could have been produced at this lab in a 48- to 72-hour period. Law enforcement officers seized approximately 3 pounds of methamphetamine as well as 150 pounds of iodine, 20 to 30 pounds of red phosphorus, \$195,000, five vehicles, and seven guns. Fifteen individuals, most of whom were Mexican citizens living in Salem, were arrested in the investigation; to date, five of the 15 were charged in a federal indictment with conspiracy to manufacture methamphetamine.

NDIC Comment: Methamphetamine laboratories in Oregon typically are not super labs - only a few of these large laboratories are discovered each year in the state. DEA officials estimate that 65 percent of all methamphetamine available in the United States is produced in super labs located in the United States or Mexico, which are often operated by Mexican drug trafficking organizations (DTOs). According to 2005 data from the El Paso Intelligence Center (EPIC) National Clandestine Laboratory Seizure System (NCLSS), 36 laboratories were seized in Oregon as of May 13, and only one was a super lab. One pound or less of methamphetamine could have been produced per production cycle in the remaining 35 small laboratories; less than 2 ounces could have been produced per production cycle in 23 of the 35 laboratories.

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Selected Intelligence Brief

HERBAL DRUG UPDATE: KRATOM

[From the NDIC *Narcotics Digest Weekly* 2005;4(16):4
Unclassified, Reprinted with Permission.]

Some epidemiologists have reported that kratom--an herbal drug derived from a tropical tree native to Southeast Asia--has significant abuse potential in the United States, where it currently is legal. Kratom leaves (fresh and dried) and plants are widely available on the Internet and probably are sold at some "head shops" in the United States. Dried kratom leaves are relatively inexpensive, often selling for \$10 to \$40 per ounce. Kratom users typically chew fresh leaves or make a tea from dried leaves, but some users smoke the dried leaves. Because kratom abuse has been recognized in several regions of Asia, the herb has been made illegal in Australia, Burma, Malaysia, and Thailand.

The primary active alkaloid in kratom is mitragynine; however, other alkaloids are present and account for a variety of effects, which are dose-dependent. Low doses usually produce stimulant effects; higher doses usually produce sedative and euphoric effects. Some users report "lucid dreaming." Effects typically begin within 5 to 10 minutes after ingestion and last approximately 6 hours. Individuals who chronically use kratom become thin, their skin darkens (particularly on the cheeks), and they experience dry mouth, constipation, and frequent urination. Withdrawal symptoms can include muscle and joint pain, hostility, aggression, eye-watering, and spastic limb movements. Users who combine kratom with nervous system depressants may experience respiratory depression, which may cause them to stop breathing.

NDIC Comment: Kratom's wide availability on the Internet suggests that demand is extensive; however, kratom abuse is not monitored by any national drug abuse survey, and NDIC has not yet received law enforcement reports regarding kratom abuse in the United States. Newspaper reports regarding kratom abuse recently were published in Malaysia, similar reports have surfaced in Great Britain, and several web sites - some based in the United States - frequented by recreational drug abusers contain extensive information about kratom. It is likely that kratom abuse is unrecognized in areas where it is occurring because the crushed, dried leaves resemble other plant-based drugs, and the effects mimic effects of other drugs.

One potential user population for kratom is opiate addicts who may attempt to self-treat if they do not have access to methadone programs or if they are reluctant to seek professional treatment. Some medical researchers have speculated that kratom may be useful as a substitute for methadone in treating opiate dependency, although more research is needed.

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SELECTED REFERENCES

[Selected references are a compilation of recent publications of presumed interest to forensic chemists. Unless otherwise stated, all listed citations are published in English. Listed mailing address information (which is sometimes cryptic or incomplete) exactly duplicates that provided by the abstracting services. Patents are reported only by their *Chemical Abstracts* citation number.]

1. Brettell TA, Butler JM, Saferstein R. **Forensic science.** Analytical Chemistry 2005;77(12):3839. [Editor's Notes: The latest edition of the authors' biennial reviews. Contact: Office of Forensic Sciences, New Jersey State Police, New Jersey Forensic Science and Technology Complex, Hamilton, NJ 08691.]
2. Cimpoi C. **Qualitative and quantitative analysis by hyphenated HPTLC-FTIR technique.** Journal of Liquid Chromatography & Related Technologies 2005;28(7-8):1203. [Editor's Notes: Includes (unspecified) applications for analysis of drugs. Contact: Faculty of Chemistry and Chemical Engineering, "Babes-Bolyai" University, Cluj-Napoca, Rom.]
3. Galimov EM, Sevastyanov VS, Kulbachevskaya EV, Golyavin AA. **Isotope ratio mass spectrometry: $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ analysis for tracing the origin of illicit drugs.** Rapid Communications in Mass Spectrometry 2005;19:1213. [Editor's Notes: Various techniques are described for determining isotope ratios in heroin, morphine, cocaine, and "hemp". Contact: Vernadsky Institute of Geochemistry and Analytical Chemistry, Russian Academy of Sciences, Kosygin St. 19, Moscow 119991, Russia.]
4. Gosav S, Praisler M, Dorohoi DO, Popa G. **Automated identification of novel amphetamines using a pure neural network and neural networks coupled with principal component analysis.** Journal of Molecular Structure 2005:744 and 821. [Editor's Notes: Amphetamines not specified in the abstract. Contact: Department of Physics, University of Galati, Domneasca St. 47, Galati 6200, Rom.]
5. Lewis R., Ward S, Johnson R, Burns D, Thorburn D. **Distribution of the principal cannabinoids within bars of compressed cannabis resin.** Analytica Chimica Acta

- 2005;538(1-2):399. [Editor's Notes: The results indicate wide variations in CBD, THC, and CBN content across the selected samples, suggesting that a single subsample is not characteristic of the entire sample. A 12 month aging study is included. Contact: Lothian and Borders Forensic Science Laboratory, Edinburgh EH16 6TF.]
6. Pihlainen K, Grigoras K, Franssila S, Ketola R, Kotiaho T, Kostainen R. **Analysis of amphetamines and fentanyl by atmospheric pressure desorption/ionization on silicon mass spectrometry and matrix-assisted laser desorption/ionization mass spectrometry and its application to forensic analysis of drug seizures.** Journal of Mass Spectrometry 2005;40(4):539. [Editor's Notes: Presents the title studies. The amphetamines and fentanyl were not specified in the abstract. Contact: Division of Pharmaceutical Chemistry, Department of Pharmacy, University of Helsinki, Helsinki FIN-00014, Finland.]
 7. Santos AP. **Methamphetamine laboratory explosions: A new and emerging burn injury.** Journal of Burn Care and Rehabilitation 2005;26(3):228. [Editor's Notes: No abstract or contact information was provided.]
 8. Thevis M, Bommerich U, Opfermann G, Schaefer W. **Characterization of chemically modified steroids for doping control purposes by electrospray ionization tandem mass spectrometry.** Journal of Mass Spectrometry 2005;40(4):494. [Editor's Notes: Presents a study of 21 steroids (not specified in abstract, but in the gestrinone, trenbolone, and testosterone series) to elucidate characteristic fragmentation patterns. Contact: Institute of Biochemistry, German Sport University Cologne, Cologne 50933, Germany.]

Additional References of Possible Interest:

1. Anonymous. **News in Brief: Lawyers and judges need training in forensic science.** Chemistry & Industry 2005;(7):8. [Editor's Notes: No abstract or contact information was provided.]
2. Hansen DB, Joullie MM. **The development of novel ninhydrin analogues.** Chemical Society Reviews 2005;34(5):408. [Editor's Notes: Focus is on application for detection of latent fingerprints. Contact: Department of Chemistry, University of Pennsylvania, Philadelphia, PA 19104.]
3. Nakai I. **Recent advances and future of X-ray fluorescence.** Oyo Butsuri 2005;74(4):453. [Editor's Notes: A brief history and review. Includes (unspecified) forensic applications. This article is written in Japanese. Contact: Dep. Appl. Chem., Fac. Sci., Tokyo Univ. Sci., Tokyo 162-8601, Japan.]
4. Okano M, Ueki M. **Origin identification of steroids by carbon isotope ratio detection.** Rinsho Kensa 2004;48(7):779. [Editor's Notes: A review. Uses GC/IRMS. Appears to be focused on urinalysis. Steroids not specified in the abstract. This article is written in Japanese. Contact: Doping Lab., Mitsubishi Chemical BCL, Inc., Japan.]
5. Sander LC. **Determination of ephedrine alkaloids in dietary supplement Standard Reference Materials.** Analytical Chemistry 2005;77(10):3101. [Editor's Notes: No abstract or contact information was provided.]

6. Schmitt-Kopplin P, Englmann M. **Capillary electrophoresis - mass spectrometry: Survey on developments and applications 2003-2004.** *Electrophoresis* 2005;26(7-8):1209. [Editor's Notes: An update on a previous published review by the authors (*Electrophoresis* 2003;24:3837). Contact: Institute of Ecological Chemistry, GSF - National Research Center for Environment and Health, Neuherberg, Germany.]

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THE JOURNAL/TEXTBOOK COLLECTION EXCHANGE

There is one offering for this quarter:

The *New York Times*, 1974 - 1992 (35 mm microfilm). First Come/First Serve; no charge to requestor. Provide full mailing address in request.

All subscribers are encouraged to donate surplus or unwanted items or collections; if interested, please consult the *Microgram* website or contact the *Microgram* Editor for further instructions.

The next offering of journals and textbooks will be in the October 2005 issue of *Microgram Bulletin*.

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THE DEA FY - 2005 AND FY - 2006 STATE AND LOCAL FORENSIC CHEMISTS SEMINAR SCHEDULE

The remaining FY - 2005 schedule for the DEA's State and Local Forensic Chemists Seminar is as follows:

September 19 - 23, 2005

The FY - 2006 schedule is as follows:

November 14 - 18, 2005

February 6 - 10, 2006

May 8 - 12, 2006

July 10 - 14, 2006

September 11 - 15, 2006

Note that the school is open only to forensic chemists working for law enforcement agencies, and 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 for this course. The course is held at the AmeriSuites Hotel in Sterling, Virginia (near the Washington/Dulles International Airport). A copy of the application form is reproduced on the last page of the August 2004 issue of *Microgram Bulletin*. Completed applications should be mailed to the Special Testing and Research Laboratory (Attention: Pam Smith or Jennifer Kerlavage) at: 22624 Dulles Summit Court, Dulles, VA 20166. For additional information, call 703/668-3337.

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SCIENTIFIC MEETINGS

1. Title: 15th Annual CLIC Technical Training Seminar (Third Monthly Posting)
Sponsoring Organization: Clandestine Laboratory Investigating Chemists Association
Inclusive Dates: September 7 - 10, 2005
Location: St. Louis, MO
Contact Information: O. Carl Anderson, Kansas Bureau of Investigation, [carl.anderson -at- kbi.state.ks.us](mailto:carl.anderson@kbi.state.ks.us)
Website: None

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2. Title: Midwestern Association of Forensic Scientists (MAFS) Annual Fall Meeting (Third Monthly Posting)
Sponsoring Organization: Midwestern Association of Forensic Scientists
Inclusive Dates: October 3 - 7, 2005
Location: St. Louis, MO
Contact Information: Bryan Hampton, [bhampton -at- saintcharlescounty.org](mailto:bhampton@stcharlescounty.org)
Website: None

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3. Title: 17th Triennial Meeting of the International Association of Forensic Sciences (IAFS) (Third and Final Bimonthly Posting)
Sponsoring Organization: International Association of Forensic Sciences
Inclusive Dates: August 21 - 26, 2005
Location: Hong Kong Convention and Exhibition Centre (Hong Kong)
Contact Information: See Website
Website: www.iafs2005.com

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The submission of evidence to a forensic laboratory is a routine occurrence. In many cases, however, the initial submission is the only routine aspect of the evidence handling. Objects, more commonly referred to as exhibits or questioned specimens, are routinely subdivided for organizational and reporting purposes. The decision to subdivide an exhibit can be complex. In the physical and biological sciences, there is a preference to analyze homogeneous units. In other forensic disciplines, such as fingerprints or questioned documents, there is often a need to treat each object (fingerprint or document) as a unique item that merits separate tracking, analysis, and reporting.

There are a number of general guidelines that are shared among forensic disciplines that are used to justify the creation of sub-exhibits from a parent exhibit. These include:

1. Is the potential probative value of an exhibit enhanced by its subdivision?
2. Is the resulting forensic analysis substantially clarified by reporting results separately?
3. Does the submitted object consist of non-homogeneous items that should be clustered into homogeneous units in order to more properly characterize their content?

4. Are there collection location issues that merit subdivision?
5. Are there ownership or user association issues that merit subdivision?

Digital evidence shares many of the same concerns regarding subdivision of evidence. In addition, there are further complexities involving exhibit labeling and packaging. Examples of the latter problem areas include:

RAID (Redundant Array Independent Drives) technology utilizes multiple hard drives to store one logical drive (for example, drive c: or d:). A RAID may utilize four or more drives, ensuring that any single hard drive failure will not result in any data loss. This is accomplished by spreading the basic unit of data storage (byte) over several hard drives, and associating a parity bit with each data unit, making it possible to accurately calculate the value of a failed hard drive as long as the remaining hard drives can be validated. This type of evidence should be considered to be one unit, even though it takes four or more hard drives to store the data. Establishing subexhibits of such exhibits is not usually merited; however, the tracking of the hard drives should be performed if they are packaged separately. The preferred method, of course, is one

container holding all of the RAID drives, thereby keeping a 1:1 ratio between the exhibit and its sealed container.

Mirrored hard drives (a different type of RAID technology) consists of two identical drives contained within one computer system. The mirrored drives are another form of data redundancy. As long as the duplicate nature of the data can be verified, the division into subexhibits will not be needed, because the examination results will be identical. However, tracking of both drives should still be performed.

Image spanning, consisting of the copying of a larger hard drive onto smaller capacity hard drives or storage media (DVDs, CDs, or tapes), is commonly used during on-site evidence collections. In such cases, the entire hard drive data is stored as one file that spans multiple storage media. Despite the fact that several pieces of media are being submitted, the image file still contains only one hard drive's content, and all the media should therefore be considered one exhibit. Ideally, the image spanning media should be sealed in one container and tracked as only one unit.

It is also possible to use a single large hard drive to store image files from several smaller hard

drives. In such instances, it is appropriate to use different exhibit numbers if the hard drives are truly unrelated. If the hard drives are taken from the same computer or out of the same room, then the assignment of subexhibit numbers may be more appropriate. This is a decision that should be made on-site by the senior agent in charge. Note that tracking a single hard drive that contains multiple exhibits can be a source of confusion for an evidence tracking system. One method for minimizing confusion is to have a comprehensive imaging work sheet form that documents the situation. Alternatively, detailed examiner notes can also be an effective means as well. It is important that a digital evidence system have the ability to simultaneously track exhibits, subexhibits, and the containers that store the exhibits and/or subexhibits.

Another important consideration involves the labeling and tracking of any archive (duplicate) evidence. Duplicates can be deemed to be best evidence when the original evidence is not available. Accordingly, the labeling and handling of such evidence needs to be identical to original evidence, to ensure its admissibility in a judicial proceeding. Information systems that track digital evidence must be able to: 1) Differentiate the original and duplicate evidence; and 2) Track the sealed containers that store it. The ability to copy digital evidence creates unique accountability issues that digital evidence laboratory evidence

systems must address.

In summary, it is usually very easy to justify the creation of subexhibits when collecting and submitting digital evidence. However, differentiation is not always appropriate. The use of subexhibit assignments should be judiciously used to avoid unnecessary evidence accountability complexity when it serves no investigative or probative benefit.

Similarly, the packaging of related digital evidence objects such as RAIDs, Spanned Images, or Mirrors into separate containers should be avoided, since they are examined as one logical unit. The use of unnecessary sealed packaging is the equivalent of unneeded subexhibit creation. The tracking of multiple containers containing the same exhibit number is also another potential source of confusion for evidence custodians.

Digital evidence management and tracking systems must be able to account for a variety of scenarios that are not normally encountered in most other forms of forensic evidence. Failure to plan for the complexities surrounding original digital evidence, archive evidence, and the attendant storage container scenarios, will result in improper labeling, unneeded subexhibits, and confusion regarding evidence and its containers.

Questions or comments?:
E-mail: Michael.J.Phelan-usdoj.gov