

Professional Review and Commentary^a

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^aThe views expressed are those of the authors and do not necessarily reflect the view, the position, or the policy of *Forensic Science Review* or members of its editorial board.

Forensic Science Review's Professional Review and Commentary section highlights contemporary issues and events in the profession of forensic science. To contribute updates or commentary or to recommend books for review, please contact Mike Baylor (mbaylor@nc.rr.com), Jeff Teitelbaum (Jeff.Teitelbaum@wsp.wa.gov), or Ray Liu (rayliu@uab.edu).



FORENSIC SCIENCE AROUND THE WORLD

Taipei International Symposium on Forensic Science and Annual Meeting of Taiwan Academy of Forensic Science — Taiwan

The Central Police University of Taiwan, publisher of *Forensic Science Review*, will host an International Symposium on Forensic Science and Criminal Investigation. The symposium will be held September 1–2, 2016, in conjunction with the Annual Conference of the Taiwan Academy of Forensic Sciences to commemorate the 80th anniversary of the founding of the institution and the inauguration of a multimillion-dollar forensic science laboratory building. Invited speakers for the event will include noted forensic scientists from Hong Kong (1), Israel (2), Japan (1), Norway (1), the United States (1), and two alumni of the institution (Henry Lee and Ray H. Liu). [Source: Dr. Hsien-Hui Meng, professor and dean, College of Police Science and Technology, Central Police University, Taiwan]

EU Drug Markets Report: In-Depth Analysis 2016 Released — European Union (Portugal/Netherlands)

The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) and Europol released a comprehensive report analyzing the illicit drug market in the European Union (EU). This report explores the concept of the illicit drug market within the broader context of changing patterns of drug use, cultural and social factors, and links to wider criminal activity. Drug markets appear to continue to be one of the most profitable areas for organized crime groups (OCGs). It is estimated that EU citizens spend over €24 billion every year on illicit drugs. Three overarching themes are detailed in this analysis:

- The organizational and technical complexity, interconnectedness, and specialization of groups involved in drug markets is increasing;
- Globalization and technology are accelerating the rate of change in the drug market; and
- Drug-market-related activities are concentrated in a number of geographical locations.

The report also presents in-depth analyses concerning the markets for the main drug types: cannabis, heroin, cocaine, synthetic stimulants, amphetamine, methamphetamine, MDMA, and new psychoactive substances (NPSs).

Cannabis is cited by the report to be the most widely used drug in Europe; it is estimated that cannabis accounts for around 38% of the retail market for illicit drugs and is worth more than €9.3 billion annually. Some 22 million

adults in the EU are reported have used it in the last year and data suggests 1% of European adults use it on an almost daily basis, increasing the risk of health and social problems. OCGs are heavily involved, making full use of technological innovations to produce larger quantities of more potent products in Europe itself.

According to the report, the heroin market is the second largest illicit drug market in the EU. It is estimated at €6.8 billion annually. The report cites heroin to be responsible for a significant proportion of drug-related deaths as well as social costs. Recent signs of increasing availability are described, as opium production remains generally high in Afghanistan. Production techniques, locations, and trafficking routes are said to be increasingly flexible and dynamic. Data in the report indicate an increase in significantly large heroin seizures. The data also suggest a shift to maritime-container trafficking. The narrative goes on to describe signs of diversification in the market, with the increased misuse of prescription medicines and new synthetic opioids.

Cocaine is Europe's most commonly used illicit stimulant according to the report, with a retail market estimated to be worth at least €5.7 billion annually. Most use occurs in western and southern Europe. The report says sea and air transport are the primary mechanisms used to traffic cocaine to Europe, with Colombia, Brazil, and Venezuela being key departure points. The Caribbean and West Africa appear to remain important transit areas, while Central America is emerging. As in other global areas, an evolving array of concealment methods have been documented, including cocaine being incorporated into "carrier materials" (e.g., plastics) before being chemically extracted upon arrival in Europe. Colombian and Italian groups continue to dominate wholesale cocaine supply to Europe, in cooperation with other groups.

The market for the main synthetic stimulants — amphetamine, methamphetamine, and MDMA — is estimated to be at least €1.8 billion annually according to the report. Recent concerns include the availability of high-dose MDMA products and the increased use of methamphetamine. In the EU, data indicates the Netherlands and Belgium to be important for MDMA and amphetamine production. Most methamphetamine, however, appears to be manufactured in the Czech Republic.

A large number of NPSs are sold openly as "legal" replacements for illicit drugs, according to the report. It appears that there are no signs of a slowdown in the

development of these substances; 100 new substances were reported for the first time in 2015 and the EU Early Warning System is monitoring more than 560 NPSs. The report describes how the market supplies both recreational and, increasingly, marginalized users and how producers anticipate legal and regulatory controls by developing new substances. Data shows that bulk quantities of NPSs may be ordered online and transported to Europe, where they are packaged and marketed on the open or illicit drug market. The report describes this as a low-risk, high-profit business attractive to organized crime and there are signs of production in Europe. Distinct but overlapping markets are also discussed, such as “legal highs”, “research chemicals”, and “dietary supplements” sold through both “bricks and mortar” and online shops.

The report is available at: <http://www.emcdda.europa.eu/system/files/publications/2373/TD0216072ENN.PDF> [Source: *European Monitoring Centre for Drugs and Drug Addiction and Europol (2016), EU Drug Markets Report: In-Depth Analysis, EMCDDA–Europol Joint publications, Publications Office of the European Union, Luxembourg*]

Injecting Use of Synthetic Drugs Special Report — United Nations

In March, a “Special Segment on the injecting use of synthetic drugs” was released by the United Nations Office on Drugs and Crime (UNODC). The use of synthetic drugs constitute one of the most significant drug problems worldwide. After cannabis, amphetamine-type stimulants (ATs) are the second most widely used drugs across the globe, with usage levels often exceeding those of heroin and/or cocaine. Along with ATs, the continued growth of the new psychoactive substances (NPS) market over recent years has become a policy challenge and a major international concern. A growing interplay between these new drugs and traditional illicit drug markets is being observed. By December 2015, the emergence of NPSs had been reported from 101 countries and territories. Trends on the synthetic drug market evolve quickly each year. The UNODC Global Synthetics Monitoring: Analyses, Reporting and Trends (SMART) Programme enhances the capacity of Member States in priority regions to generate, manage, analyze, report, and use synthetic drug information to design effective policy and program interventions.

This special report attempts to explore the diversity of the injecting use of stimulants, (including ATs and NPSs with stimulant effects) in different regions of the world. It demonstrates that injecting use of synthetic drugs with stimulant effects exists in many parts of the world and that injecting use of NPSs with stimulant effects seems to have spread among certain user groups. These aspects

appear to be particularly relevant for drug policies and programs in the light of Sustainable Development Goal 3 “to ensure Healthy Lives and Promote Well-Being for All at All Ages”, and its specific targets of: “By 2030, end the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases” and “Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol”. Injecting and sexual-risk behaviors of people who inject stimulants (including ATs and NPSs with stimulant effects) may expose already vulnerable injecting drug users to additional health risks, including an elevated risk of acquiring or transmitting HIV and other blood-borne viruses. The report stresses that it is important that policy responses take this vulnerability into consideration when designing programs and services to support and protect people who inject drugs. The thematic segments presented in the report provide detailed and concrete examples of studies on injecting drug use relating to ATs and NPSs with stimulant effects. Although the number of relevant studies, particularly derived from Europe and North America, is much larger than the small selection presented, the thematic segment follows the usual geographic approach and covers all major regions equally to the extent possible.

According to the report, the Global SMART Programme was launched in September 2008 and provides capacity building to laboratory personnel, law enforcement, and research officers in the Pacific, East and South-East Asia, South Asia, the Near and Middle East, Africa, and Latin America. It regularly reviews the global status of ATs and NPSs. Its main products include online drug-data collection, situation reports, regional assessments, and the UNODC Early Warning Advisory (EWA) on NPSs. The EWA is a web portal that offers regular updates on new psychoactive substances, including trend data on emergence and persistence, chemical data, supporting documentation on laboratory analysis, and national legislative responses (available at: www.unodc.org/NPS).

The Global SMART Update (GSU) series is published twice a year in English and Spanish and provides information on emerging patterns and trends of the global synthetic drug situation in a concise format. Electronic copies of the GSUs and other publications are available at: www.unodc.org/unodc/en/scientists/publications-smart.html. Past issues have covered topics such as legal responses to NPSs, key facts about synthetic cannabinoids, regional patterns of methamphetamine manufacture, and the changing nature of “ecstasy”. [Source: *UNODC, Global SMART Update, Volume 15, March 2016*]

NIJ and University of South Carolina — Improving Detection of Crime Scenes: Infrared Camera Rapidly Identifies Blood Stains for Collection and Analysis —

United States

The detection, collection, and analysis of blood evidence recovered from a crime scene is critical in a forensic investigation because of the potential DNA it carries. However, crime scenes are often chaotic, and biological fluids can be hard to locate. The most common method for detecting blood stains is to spray a crime scene with luminol, a chemical that reacts with iron in blood to emit a blue glow that can be seen in the dark; the use of luminol has its disadvantages. It can produce false positives when reacting with many common household items, can dilute blood samples to a level at which DNA cannot be recovered, and can smear blood spatter patterns that are often critical in determining how a victim was attacked.

With the support of the National Institute of Justice (NIJ) funding, chemist Stephen Morgan and his team at the University of South Carolina in Columbia, SC, have developed a prototype thermal infrared (IR) camera that can rapidly and selectively identify blood stains in ambient lighting without the use of reagents. Benefits of this new technology include:

- Identifies stains that require further chemical analysis without interfering with the sample;
- Detects blood even when the sample has been diluted to 1 part per 1,000;
- Enables blood detection in daylight;
- Preserves integrity of blood stains and spatter patterns because IR imaging is standoff and noninvasive, and noncontact;
- Protects examiners from being exposed to chemicals unnecessarily;
- Is easy to use, reducing the need for trained staff to be on site; and
- Is relatively inexpensive, allowing greater access to the technology.

According to Dr. Morgan, “This technology provides the ability to detect blood in all sorts of circumstances, even in some cases where traditional techniques can’t.” The camera, which can be operated by a person with minimal technical knowledge, highlights blood stains by filtering out wavelengths that are not characteristic of blood proteins. The prototype has been refined for forensic use, with complete automation of image processing and enhanced sensitivity. Additionally, a novel IR lamp using a heated alumina emitter was also developed for active thermal IR imaging. [Source: NIJ “Moving Knowledge from Research to Impact” News Brief, www.nij.gov]

PROFILES IN FORENSIC SCIENCE

The National Commission on Forensic Science

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In February 2013, the US Department of Justice (DOJ) and the National Institute of Standards and Technology (NIST) announced a partnership that included formation of the National Commission on Forensic Science (NCFS) and what is now the Organization of Scientific Area Committees (OSAC). As a federal advisory committee for DOJ, NCFS involves public meetings, public input on draft documents, and an open website sharing meeting materials and final documents (<https://www.justice.gov/ncfs>). Video recordings of past meetings are available as well (<http://www.nist.gov/forensics/ncfs.cfm>).

Co-chaired by Deputy Attorney General Sally Yates and NIST Director Willie May, the NCFS meets four times a year and involves energetic discussions on a variety of issues.

* Vice-Chair of the National Commission on Forensic Science; NIST Fellow & Special Assistant to the NIST Director for Forensic Science.

Since its first meeting in February 2014, the NCFS has met nine times (as of April 2016) and approved 23 important work products that are seeking to strengthen various aspects of the forensic science ecosystem (see **Figure 1** below). Work products come in the form of “Views” (V) of the NCFS or “Recommendations” (R) for the attorney general to take a specific action. DOJ has committed to respond to recommendations by the second NCFS meeting following the document’s approval. Seven NCFS subcommittees have helped create these policy documents:

- Accreditation & Proficiency Testing;
- Human Factors;
- Interim Solutions;
- Medicolegal Death Investigation;
- Reporting & Testimony;
- Scientific Inquiry & Research; and
- Training on Science & Law.

NCFS currently comprises 32 voting and 8 *ex officio* members who represent a diverse set of stakeholders including federal, state, and local forensic science and forensic medicine service providers; research scientists and academics; law enforcement officials; prosecutors, defense attorneys, and judges. About 60 additional subject-matter experts aid NCFS subcommittee work. As a federal advisory

committee, NCFS operates on two-year renewable terms. The second NCFS term ends on April 23, 2017.

Figure 1 is an attempt to show where the 23 NCFS documents thus far approved impact what can be termed the “forensic science ecosystem”, which involves law enforcement, forensic laboratories, scientific (academic) research, medical examiner or coroner’s offices, and the legal system. For example, NCFS work product #20 is a recommendation regarding a National Code of Professional Responsibility for Forensic Science and Forensic Medicine Service Providers, which received approval at the March 2016 meeting. This recommendation is currently under consideration by DOJ.

At the June 20–21 NCFS meeting, final drafts for seven work products may be introduced for a vote and approval by the commission. These documents include recommendations regarding pretrial discovery, a request

for NIST to perform developmental validation studies, accreditation of digital and multimedia forensic science service providers, and formation of a national disaster call center. Views documents under consideration cover judicial vouching of experts, notice and demand provisions, and validation of forensic science methodology.

The NCFS’s vision is for all forensic evidence to support the equal and impartial application of justice. The NCFS efforts can be framed into three primary goals:

- *Foundational* — to improve the underlying science and validity of forensic evidence and methods;
- *Operational* — to improve operational and management systems of forensic science service providers and forensic science medical providers; and
- *Applicational* — to improve clarity and understanding of forensic evidence.

Hopefully, these goals can be realized as NCFS produces work products to strengthen the forensic science ecosystem.

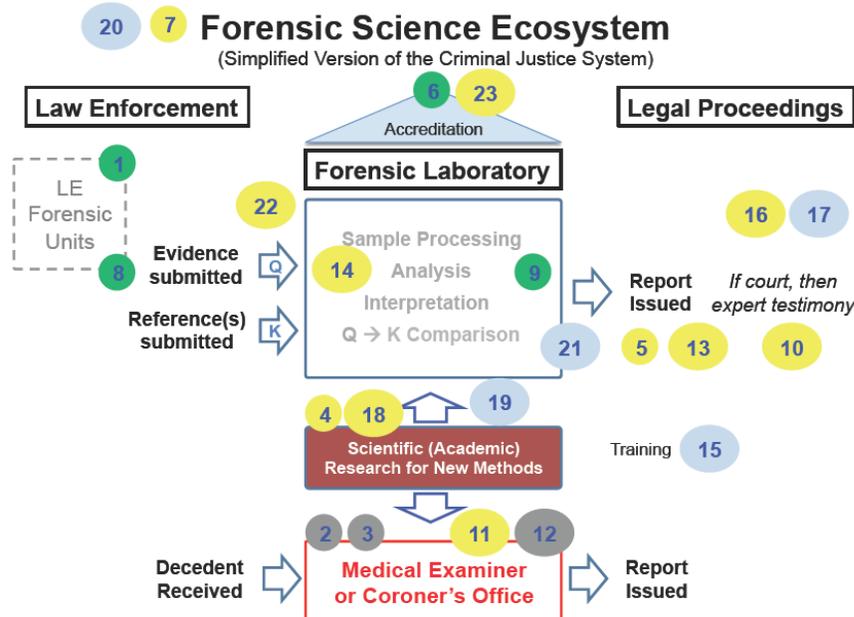


Figure 1. First 23 NCFS-adopted work products, including Recommendations (R) and Views (V). (see <https://www.justice.gov/ncfs>). (Note: R-1, 6, 8, and 9 have been responded to by DOJ; R-2, 3, and 12 are outside the purview of DOJ; R-15, 17, and 19–21 are being considered; V-4, 5, 7, 10, 11, 13, 14, 16, 18, 22, and 23 are views of the Commission; Q = questioned sample; K = known sample.)

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|--|---|
| 1. Survey of Law Enforcement Forensic Units (R) | 13. Documentation, Case Record, and Report Contents (V) |
| 2. Accreditation of Medical Examiner and Coroner Offices (R) | 14. Ensuring that Forensic Analysis is Based Upon Task-Relevant Information (V) |
| 3. Certification of Medicolegal Death Investigators (R) | 15. Forensic Science Curriculum Development (R) |
| 4. Scientific Literature in Support of Forensic Science and Practice (V) | 16. Using the Term “Reasonable Degree of Scientific Certainty” (V) |
| 5. Inconsistent Terminology (V) | 17. Using the Term “Reasonable Degree of Scientific Certainty” (R) |
| 6. Universal Accreditation (R) | 18. Establishing the Foundational Literature within the Forensic Science Disciplines (V) |
| 7. Forensic Science and Related Terms (V) | 19. Fund Post-Doctoral Projects to Facilitate Translation of Research into Forensic Science Practice (R) |
| 8. Automated Fingerprint Identification System (AFIS) Interoperability (R) | 20. National Code of Professional Responsibility for Forensic Science and Forensic Medicine Service Providers (R) |
| 9. Root Cause Analysis (RCA) in Forensic Science (R) | 21. Transparency of Quality Management System Documents (R) |
| 10. Pretrial Discovery of Forensic Materials (V) | 22. Proficiency Testing in Forensic Science (V) |
| 11. Increasing the Number, Retention, and Quality of Board-Certified Forensic Pathologists (V) | 23. Critical Steps to Accreditation (V) |
| 12. Electronic Networking of Medical Examiner and Coroner Offices (R) | |

Rodolphe Archibald Reiss (1875–1929)

— An underrecognized pioneer in forensic science —



(Source: Ref. [1])

“Assuredly the criminal element of our population is forging ahead with terrible strides, and perfecting its methods in exact proportion with the progress of science.” —Reiss, 1907

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The field of forensic science did not always have the word “science” connected to it. It took the efforts of a young German chemist named Rodolphe Archibald Reiss (1875–1929) to formally link what had previously been a variety of homegrown techniques used by police and detectives into a rigorous and science-based university program. The name of Rodolphe Reiss has been overshadowed by his higher-profile contemporaries — Edmond Locard, Alphonse Bertillon, Hans Gross, to name a few — but his many contributions should secure him a place of merit in the history of forensic science [2].

Reiss was of Prussian origin, born near Sulzbach in the Black Forest region of Germany, and eventually traveled to Switzerland to study chemistry at the University of Lausanne. By the time he received his doctorate at age 22, he had also performed extensive studies with photography and photochemistry, and his first book, published in 1900, was titled *The Photographic Development of Gelatino-Bromide*. He became interested in the use of photography in police investigations and relocated to Paris, where he studied with Alphonse Bertillon. He became enamored of Bertillon’s anthropomorphic techniques and incorporated many of them into his next two books: *Forensic Photography (La Photographie Judiciaire)* and *Handbook of the Talking Picture (Manuel du Portrait Parlé)*. The latter book was very popular and was translated into 10 languages. He also wrote numerous journal articles; among them are:

- Contribution to the study of forensic science [3];
- Scientific methods in forensic and police enquiries [4];
- The photographic detection of invisible writing inks [5];
- A short history of forensic photography [6];
- Crime-detection by the camera [7]; and
- The training of a modern detective [8].

Reiss became a professor at the University of Lausanne in 1906 and by 1909 had created the **Institut de Police Scientifique** within the university. This was the first university program in the world dedicated to research and training in the forensic sciences. Topics in his curriculum included crime scene reconstruction, which covered the study of toolmarks, foot and shoeprints, bloodstain pattern analysis, finger and palm prints, forgery and handwriting analysis, and many other techniques. His favorite investigative



(Source: Ref. [7])

“The means employed by the police fifty years ago do not suffice to-day. We have to meet the criminal on equal terms, and surpass him, if possible, in finesse. This is feasible only by giving our police force a professional training, based upon scientific methods, i.e. by requisitioning the researches of scientific men for the science of criminal inquiry.” —Reiss, 1906

tool, however, was the camera, and he wrote dozens of highly technical articles on photographic techniques. He wrote about numerous criminal cases in which magnified photographs revealed clues that led to successful outcomes. He wrote about transferring fingerprints to photographic plates so that they could be better viewed, and about techniques for taking measurements from a photograph. Many of the most striking crime-related photographs from the early 1900s were those taken and published by Reiss.

Reiss’s forensic science program at the University of Lausanne brought worldwide attention from law enforcement programs around the world. He also published his best-known book, the *Manual de Police Scientifique*, which brought him further recognition. Reiss accepted invitations to travel to Russia, Brazil, and many other countries to lecture on criminal investigation topics, as well as to assist local law enforcement organizations to organize police laboratories and develop training programs.

Reiss’s career took a dramatic turn as a result of World War I. The Serbian government engaged him to investigate atrocities committed by invading forces against the Serbian people, and Reiss became a lifelong ally to the Serbs. From approximately 1914 to 1919, he published 11 books, which he called his “war books,” in which he detailed his findings. One book was titled *The Kingdom of Serbia — Infringement of the Rules and Laws of War Committed by the Austro-Bulgaro-Germans: Letters of a Criminologist on the Serbian Macedonian Front*. He received numerous awards from the Serbian government, and, after the war ended, chose to remain in Yugoslavia and made his home in Belgrade. Until his death in 1929, Reiss continued to teach forensic science techniques and organized a police laboratory. The forensic school, the *Institut de Police Scientifique* (now *the Ecole des Sciences Criminelles*) that he created at the University of Lausanne, remains thriving in its 117th year.

References

1. Reiss S: *La Photographie Judiciaire*; Charles Mendel: Paris, French; 1903.
2. Mather J: Professor RA Reiss: A pioneer of forensic science; *Journal of the Forensic Science Society* 24(2):131; 1984.
3. Reiss RA: Contribution a l'Etude de la Police Scientifique; *Archives de l'anthropologie criminelle*; 156:569; 1906
4. Reiss RA: Les méthodes scientifiques dans les enquêtes judiciaires et policières; *Archives de l'anthropologie criminelle* 156:857; 1906
5. Reiss RA: Le décèlement photographique des "décharges invisibles" des encres; *Revue suisse de photographie* 17:225; 1905
6. Reiss RA: A peu d'histoire de la photographie judiciaire; *Revue suisse de photographie*; 17:327; 1905
7. Reiss RA: Crime-detection by the camera; *The Pall Mall Magazine* 39(165):47; 1907.
8. Reiss RA: The training of a modern detective; *The Pall Mall Magazine* 39(168):456; 1907.

COMMENTARY/UPDATE

Organization of Scientific Area Committees for Forensic Science News

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The influence of bias on stated opinions and conclusions, the consideration of the emotional toll that examiners face across disciplines, as well as the importance of standardized reporting processes for forensic science practitioners, were major themes and topics discussed at the public reporting sessions of the OSAC February 22–23, 2016, at the American Academy of Forensic Sciences (AAFS) meeting. OSAC chairs and/or their designees provided status reports on standards and guidelines projects, as well as on other OSAC activities.

The OSAC, which is administered by the National Institute of Standards and Technology (NIST), fosters the development and promotion of technically sound, consensus-based documentary standards and guidelines that can be used to strengthen the practice of forensic science. The OSAC consists of a Forensic Science Standards Board (FSSB), three resource committees, five scientific area committees, and 24 subcommittees, and has a total of 542 members from various disciplines and organizations to include federal, state, and local government, the private sector, and academia. The OSAC meets in person once every nine months, in addition to public reporting at AAFS, and also conducts hundreds of virtual meetings annually.

The OSAC has recently refined their focus to concentrate on 144 specific projects (standards/guidelines) moving within the OSAC processes. Standards/guidelines projects were narrowed down from the original 360+ projects originally identified by the OSAC in February 2015, in order to strategically focus on each unit's priorities. Details on individual draft standards and guidelines were provided. All 29 presentations and questions from the audience will be webcast live, and archived for future on-demand viewing. Materials are located here: <http://www.nist.gov/forensics/osac/nist-scientific-area-committee-meetings-february-2016.cfm>.

OSAC also documents practitioner feedback that arises during standards gaps analysis, particularly regarding research and development needs. The OSAC recently publicly shared those research gaps with the broader community to help inform the forensic science community on where additional scientific inquiry is warranted. This research gap list will eventually encompass inputs from the all of the 24 subcommittees and 5 SACs, and can

be found at <http://www.nist.gov/forensics/osac/osac-research-needs-assessments.cfm>.

Continued feedback and willingness to collaborate will be critical to achieving OSAC's mission. Please contact forensics@nist.gov with program questions or to provide feedback.

Symposium Showcases Forensics at NIST

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Forensic science research goes back a long way at the National Institute of Standards and Technology (NIST) — more than a century. In fact, the agency served as the nation's federal crime laboratory from 1913 to 1932, when the FBI established its own research arm. Today, NIST research programs continue to make significant contributions to forensics, strengthening its scientific underpinnings and ensuring the credibility necessary for effective criminal justice.

To spotlight how NIST currently serves the forensics community, the agency is hosting a two-day symposium, "Forensics@NIST2016" November 8–9, 2016, at NIST headquarters in Gaithersburg, MD. The symposium's agenda will include:

- November 8: NIST's latest forensic science research in select areas that may include ballistics, biometrics, DNA, drug analysis, trace, and statistics will be highlighted.
- November 9: Work from NIST's new Forensic Science Center of Excellence (FSCOE) will be highlighted. Led by Iowa State University (Ames, IA), the FSCOE, now titled the Center for Statistics and Applications in Forensic Science (CSAFE) is a partnership that also includes Carnegie Mellon University (Pittsburgh, PA), the University of Virginia (Charlottesville, VA) and the University of California, Irvine (Irvine, CA). The CSAFE research focuses on improving the statistical foundation for pattern and digital evidence analyses.

To register, visit: <http://www.nist.gov/forensics/forensics-at-nist-2016.cfm>. The two day program will be web cast for external viewing.

* Manager for NIST's forensic science research programs.

UPCOMING EVENTS

International Association for Identification (IAI) — International Education Conference

August 7–13, 2016; Cincinnati Duke Energy Convention Center
Cincinnati, OH, US

International Forum on Drug & Alcohol Testing (IFDAT) — 2016 Annual Conference

August 24–25, 2016; Radisson Blu Atlantic Hotel
Stavanger, Norway

54th Annual Meeting of the International Association of Forensic Toxicologists (TIAFT) — Joint meeting of TIAFT & Forensic and Clinical Toxicology Association (FACTA) of Australasia

August 28–September 1, 2016; Brisbane Convention & Exhibition Centre
Brisbane, Queensland, Australia

The National Commission on Forensic Science (NCFS) — NCFS Meeting 11

September 12–13, 2016; Venue to be announced
Gaithersburg, MD, US

International Symposium on the Forensic Sciences

September 18–23, 2016, SkyCity Auckland Convention Centre
Auckland, New Zealand

Southwestern Association of Forensic Scientists (SWAFS) — Annual Meeting

September 25–29, 2016, Tremont House (A Wyndam Grand Hotel)
Galveston, TX, US

Northwest Association of Forensic Scientists (NWAFS) Annual Meeting

September 26–30, 2016; The Riverside Hotel
Boise, ID, US

Southern Association of Forensic Scientists (SAFS) — 50th Anniversary Meeting

September 26–30, 2016; Hyatt Regency on Sarasota Bay
Sarasota, FL, US

Midwestern Association of Forensic Scientists (MAFS) — Annual Meeting

October 3–7, 2016; Hilton Branson Convention Center
Branson, MO, US

Northeastern Association of Forensic Scientists (NEAFS) — Annual Meeting

October 12–15, 2016; Harrah's Resort and Casino
Atlantic City, NJ, US

Society of Forensic Toxicologists (SOFT) — Annual Meeting

October 16–21, 2016; Sheraton Dallas Hotel
Dallas, TX, US

California Association of Criminalists (CAC) — Joint Meeting with American Society Trace Evidence Examiners

(Hosted by CA DOJ Riverside Laboratory)
October 31–November 4, 2016; Omni Rancho Las Palmas Resort and Spa
Rancho Mirage (Palm Springs Area), CA, US

5th Annual DNA and Investigators Conference — Bode Mid Atlantic

(Hosted by Bode Cellmark Forensics)
November 7–10, 2016; Venue to be announced
Philadelphia, PA, US

Forensics@NIST 2016 Symposium

November 8–9, 2016; NIST Campus
Gaithersburg, MD, US

5th International Conference on Forensic Research & Technology

November 17–19, 2016; DoubleTree by Hilton Hotel — San Francisco Airport
San Francisco, CA, US

The National Commission on Forensic Science (NCFS) — NCFS Meeting 12

January 9–10, 2017; Venue to be announced
Washington, DC, US

American Academy of Forensic Sciences (AAFS) — 69th Annual Meeting

February 13–18, 2017; Hyatt Regency New Orleans
New Orleans, LA, US

PITTCON Conference and Expo

March 5–9, 2017; McCormick Place
Chicago, IL, US

The National Commission on Forensic Science (NCFS) — NCFS Meeting 13

April 10–11, 2017; Venue to be announced
Washington, DC, US

International Association for Chemical Testing — 2017 Conference

April 23–28, 2017; Cheyenne Mountain Resort
Colorado Springs, CO, US

American Society of Crime Laboratory Directors — Annual Symposium

April 30–May 4, 2017; Sheraton Dallas Hotel
Dallas, TX, US

California Association of Criminalists (CAC) — Spring Conference 2017

(Hosted by San Francisco Police Department Laboratory)
May 2017; Exact dates and venue to be announced
San Francisco, CA, US

California Association of Toxicologists (CAT) — 50th Anniversary Meeting
 May 5–6, 2017; Paradise Point Resort
 San Diego, CA, US

The Association of Firearm and Tool Mark Examiners (AFTME) — Annual Training Seminars
 May 14–19, 2017; Venue to be announced
 Denver, CO, US

NEW FORENSIC SCIENCE BOOKS/CD-ROMS

A Guide to Forensic DNA Profiling

A. Jamieson, S. Bader (Eds)
 Wiley-Blackwell: Somerset, NJ, US; 2016

Blinding as a Solution to Bias — Strengthening Biomedical Science, Forensic Science, and Law

C. Robertson, A. Kesselheim (Eds)
 Academic Press/Elsevier: Waltham, MA, US; 2016

***Color Atlas of Forensic Medicine and Pathology*, 2nd ed**

C. Catanese (Ed)
 CRC Press: Boca Raton, FL, US; 2016

***Estimation of the Time Since Death*, 3rd ed**

B. Madea (Ed)
 CRC Press: Boca Raton, FL, US; 2015

Evidence Found, An Approach to Crime Scene Investigation

D. Miranda
 Academic Press/Elsevier: Waltham, MA, US; 2016

Firearm and Toolmark Examination and Identification

M. Houck (Ed)
 Academic Press/Elsevier: Waltham, MA, US; 2016

Forensic Chemistry: Fundamentals and Applications

J. Siegel
 Wiley-Blackwell: Somerset, NJ, US; 2015

Forensic Fingerprints

M. Houck (Ed)
 Academic Press/Elsevier: Waltham, MA, US; 2016

Forensic Odontology: Principles and Practice

J. Taylor, J. Kieser (Eds)
 Wiley-Blackwell: Somerset, NJ, US; 2016

Forensic Plant Science

J. H. Norris, D. O. Bock
 Academic Press/Elsevier: Waltham, MA, US; 2016

Forensic Psychiatry, A Lawyer's Guide

V. Shnaidman
 Academic Press/Elsevier: Waltham, MA, US; 2016

***Forensic Science: The Basics*, 3rd ed**

J. Siegel, K. Mirakovits
 CRC Press: Boca Raton, FL, US; 2015

Forensic Toxicology: Mechanisms and Pathology

R. H. Powers, D. E. Dean
 CRC Press: Boca Raton, FL, US; 2015

Forensic Toxicology, Principles and Concepts

N. T. Lappas, C. M. Lappas
 Academic Press/Elsevier: Waltham, MA, US; 2016

***Forensic Uses of Digital Imaging*, 2nd ed**

J. C. Russ
 CRC Press: Boca Raton, FL, US; 2016

Identifying Ignitable Liquids in Fire Debris, A Guideline for Forensic Experts

J. Hendrikse, M. Grutters, F. Schäfer
 Academic Press/Elsevier; Waltham, MA, US; 2015

***Knight's Forensic Pathology*, 4th ed**

P. Saukko, B. Knight
 CRC Press: Boca Raton, FL, US; 2015

***Karch's Pathology of Drug Abuse*, 5th ed**

S. B. Karch, O. Drummer
 CRC Press: Boca Raton, FL, US; 2015

Latent Print Processing Guide

S. Kasper
 Academic Press/Elsevier: Waltham, MA, US; 2016

***Practical Analysis and Reconstruction of Shooting Incidents*, 2nd ed**

E. E. Hueske
 CRC Press: Boca Raton, FL, US; 2015

The Crime Scene, A Visual Guide

M. Miller, P. Massey
 Academic Press/Elsevier: Waltham, MA, US; 2016

Toxicology of Cyanides and Cyanogens: Experimental, Applied and Clinical Aspects

A. H. Hall, G. E. Isom, G. A. Rockwood (Eds)
 Wiley-Blackwell: Somerset, NJ, US; 2015

Using Forensic DNA Evidence at Trial: A Case Study Approach

J. M. Taupin
 CRC Press: Boca Raton, FL, US; 2016

Utilizing Forensic Technologies for Unidentified Human Remains: Death Investigation Resources, Strategies, and Disconnects

G. W. Adams
 CRC Press: Boca Raton, FL, US; 2015

BOOK REVIEW

Atlas of Human Poisoning and Envenoming, 2nd ed
J. H. Diaz
 CRC Press: Boca Raton, FL, US; 2015

Reviewed by: *L. J. Marinetti, Redwood Toxicology Laboratory, Santa Rosa, CA, US*

The *Atlas of Human Poisoning and Envenoming* is an overview of toxicology specifically as it relates to poisoning and is divided into four sections: I. General Medical Toxicology, II. Environmental Toxicology, III. Industrial and Occupational Toxicology, and IV. Epidemiology and Statistics for Toxicology. Each section is further divided into chapters, with 36 chapters in total.

Section I, General Medical Toxicology, is divided into 16 chapters including pharmacology, general poisoning management and diagnostic workup, antidotes, nephrotoxicology, reproductive and perinatal toxicology, and neurotoxicology.

This section also covers the toxicity of various categories of drugs and chemicals including: antiseptics, drug additives, over-the-counter drugs, opioids, household products, illicit drugs, anticonvulsants, sedative-hypnotics, endocrine agents, cardiovascular drugs, antibiotics, and anticancer drugs. Chapter 1, Pharmacology, is a useful overview of xenobiotic absorption including routes of administration, rates of absorption, and factors affecting bioavailability. Distribution is discussed, including bound vs. unbound, physiochemical determinants, volume of distribution, and compartment models. Metabolism is also covered with overviews of rate, the CYP450 system, drug-drug interactions, excipients, therapeutic index, dose-response relationships, and elimination kinetics. The last couple of pages of this chapter discuss poisoning in children and the elderly. Chapter 2, General Poisoning Management, is devoted to preventing poison absorption and features topics such as emesis, lavage, activated charcoal, cathartics, and whole-bowel irrigation. Various types of elimination enhancement are also discussed. This chapter then moves on to patient assessment, including primary and secondary survey and treatment. The chapter concludes with unusual exposures, diagnostic odors of xenobiotics, and the pharmacokinetics of compartment models and elimination patterns. Chapter 3 covers the diagnostic workup of the poisoned patient and discusses laboratory testing, blood and serum concentration of some common xenobiotics, the utility of x-rays, CT scans, and ECGs, and includes some photo examples. Chapter 4, Poison Antidotes, covers toxidromes of parasympathetic and sympathetic toxins, herbal poisonings, central nervous system toxins,

and metal exposure. Decontamination protocols are discussed, covering some of the material already presented in Chapter 2 with the addition of antivenom, antitoxins, antagonists, and chelation therapy. Chapter 5 begins a series of chapters on classes of xenobiotic poisonings and discusses antiseptics and drug additives. Each chapter in this series covers epidemiology, toxicology, clinical manifestations, diagnosis, treatment, and complications. Chapter 6 discusses over-the-counter drugs and opioid analgesics. Household-product poisonings are discussed in Chapter 7 and the xenobiotics are divided into alkalis, acids, disinfectants, food additives, aquarium and art products, batteries, cosmetics, hydrocarbons, alcohols, and glycols.

Chapter 8 is entitled Drug and Illicit Substance Abuse. This chapter briefly covers many different drugs and drug categories, some better than others. For example, the only date-rape drugs discussed are GHB and Rohypnol, thus perpetuating the misinformation that these two are the predominant drugs in this category. Clinical manifestations and treatment are also included. This chapter does contain a few references. Chapter 9 discusses anticonvulsants and sedative hypnotics with some of the same material covered in Chapter 8 repeated. Reproductive and perinatal toxicology and teratogenesis are discussed in Chapter 10. Pharmacokinetics, poisoning, substance abuse, and breast-feeding toxicokinetics are explained relevant to how xenobiotics may behave differently in these conditions. Hypoglycemia and other endocrine-agent toxicities are discussed in Chapter 11. Cardiovascular drug toxicity is discussed in Chapter 12, with subsections on children versus adults and lab diagnosis. In Chapter 13, antibiotic toxicity is discussed, which is a good addition as these drugs are so commonly prescribed. For some reason, mushroom poisoning is also briefly mentioned in this chapter. Anticancer drugs and human carcinogens are explored in Chapter 14. Chapter 15 covers environmental and occupational nephrotoxicology, including epidemiology and pathophysiology, with a discussion of direct and indirect renal failure as well as biomarkers of renal failure. Mushroom toxicity is discussed again along with hemlock and metals. There is also a pretest and a post-test in this chapter. Chapter 16 covers neurotoxicology including a discussion on what makes the nervous system more or less vulnerable to injury. Neuroanatomy is also discussed as well as mechanisms of action and symptomology; this chapter ends with conclusions on what types of xenobiotics damage specific areas of the brain.

Section II, Environmental Toxicology, starts with Chapter 17, Food Poisoning. Clinical manifestations and etiologic agents are discussed and there is a practice test at the end of this chapter with case examples. Chapter 18 is dedicated to seafood poisoning but also includes a discussion of freshwater inhabitants as well. Conclusions and a practice test are also included at the end of this chapter. Even though poisonous mushrooms are discussed in various chapters, Chapter 19 is devoted to mushroom poisoning. This chapter contains many photos and diagrams, which are very helpful in identifying and distinguishing poisonous versus nonpoisonous mushrooms. Herbal poisonings are discussed in Chapter 20 and are divided into plant oils and then further divided into what body system or organ is affected by the poisoning. This chapter also covers vitamin poisoning. Common poisonous garden and household plants are covered in Chapter 21. This is a very practical chapter as many people have these plants in their homes or gardens. This chapter also includes color photos of some of the plants along with the odd placement of color photos of toxic fish, starfish, mushrooms, snakes, spiders, and caterpillars. Chapters 22 through 25 describe bites or stings from various types of reptiles, including lizards, snakes, newts, toads, spiders, scorpions, bees, wasps, hornets, ants, moths, centipedes, and millipedes. Those insects that are vectors for diseases are also covered such as mosquitos, flies, midges, mites, lice, fleas, and ticks. Marine stings or bites from coral, starfish, sea urchins, jellyfish, hydroids, cone shells, octopuses, puffer fish, stingrays, bony fish, weaver fish, sea snakes, lionfish, and stonefish. Chapter 24 is devoted to tick paralysis. Chapter 26 covers poisoning that can occur through practice of Cajun, Voodoo, and Hoodoo traditions with the discussions covering some of the xenobiotics used in the practice of these traditions.

Section III, Industrial and Occupational Toxicology, opens with Chapter 27 discussing volatile organic chemicals and their clinical presentations and mechanism of toxicity. Chapter 28 is devoted to petrochemical toxicity including a discussion of the Deepwater Horizon platform explosion with a comparison to the Ixtoc oil spill. Chapter 29 covers industrial gas exposures and occupational lung disease. This chapter covers topics such as asphyxiates, pulmonary irritants, smoke inhalation, carbon monoxide, cyanide and hydrogen sulfide poisoning, and tear gas. Chapter 30

discusses metal and metalloid poisonings, covering lead in detail. No poisoning book would be complete without a discussion of rat poison. Chapter 31 covers rodenticides, insecticides, and herbicides. The chapter concludes with regulatory federal legislation regarding these substances and a chapter test. Chapter 32 covers radiation toxicology and discusses some of the major events associated with radiation and radiation poisoning; it includes a historical timeline from the discovery of x-rays to Fukushima Prefecture Japan in 2011. The science of radiation and various radiation sources are also discussed. Chapter 33 covers the topic of chemical, biological, and radiological weapons and warfare with information on definitions, history, and agents. There are also discussions of plagues, epidemics, and viruses. Chapter 34 is about workplace substance-abuse monitoring and seems out of place in this reference book. This chapter covers the MRO, chain of custody, forensic lab selection, and typical drugs, but is outdated when it comes to the latest drugs and analytical methodology. Chapter 35 is miscellaneous toxicants and includes discussions of 2-propenal, acrylamides, acrylates, anilines, azides, amines, bromides, carbon disulfide, chlorates, coal tar, dibromochloropropane, dimethylacetamide, dimethylformamide, dinitrobenzene, dinitrotoluene, epichlorohydrin, ethylene bromide, ethylene diamine, isocyanates, phthalates, fluoride compounds, and more.

Section IV, Epidemiology and Statistics for Toxicology, contains the last chapter, number 36, which covers these topics and includes discussions on probability, binomial distribution, descriptive statistics, summary analysis, variation, distribution, differential statistics, hypothesis testing, cohort and case-controlled studies, and ends with error and power.

This is a handy reference book and is written as such with brief information being relayed in the form of partial sentences and bullet points. The disappointing feature of this text is its lack of references for the reader that would like more information. The best feature of this text are the photos and diagrams used to illustrate specific points or to identify a poisonous creature or plant. This reference book may serve as a valuable addition to the libraries of many forensic science and toxicology practitioners.

