SCHC-OSHA Alliance Products – Hazard Communication Information Sheets

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The SCHC and the US Occupational Safety and Health Administration (OSHA) have long partnered together to develop reference products to aid hazard communicators. The SCHC-OSHA Alliance Committee has recently posted a number of Information Sheets outlining the details of the US OSHA Implementation of the Globally Harmonized System of Classification and Labelling. This poster will outline the process by which these products have been developed as well as identify the existing products with an aim to increase member awareness and use.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Characterizing Occupational Exposures in a Hair Salon

Student: Keerthanaa Jeeva
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Institution: University of Minnesota School of Public Health – Exposure Science & Sustainability Institute (ESSI)

There are an estimated 1.45 million Beauty Salon Professionals (BSP) in the U.S., working in salons where they are constantly exposed to the products they use. While there is research available on certain chemicals used in the hair products, there's a lack of research on risk characterization and exposure to hair salon workers, which limits the ability of concerned health professionals and BSP to develop effective exposure and risk reduction strategies. To characterize exposures to chemicals from products that can evaporate into the workplace air and thus be inhaled, a pilot study was conducted using a hair salon in the southeastern U.S. as an illustrative case study. We applied a systematic data collection process and reviewed information and materials pertaining to the determinants of exposure. Individualized surveys were then given to the workers to obtain habits and practices information. Using this information to design a simulation study, a contaminant generation rate for ammonia emanating from the mixture of two hair products was conducted in an exposure chamber.

The results of this work will be used to develop training aids including a narrated Power point video that will be uploaded to the internet and made available free of charge.

(The results from the chamber study are still being analyzed)

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POSTER ABSTRACTS
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Revitalizing Indianapolis' Near West Side Community Using Brownfield Prioritization Systems

Student: Jeries Smirat
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Brownfields mar the landscape of Indianapolis, a city that was once heavily industrialized and is now the home to many remediation sites. Indianapolis is also a city with a diverse population and concerns about environmental disparities. This project outlines how brownfield sites are tied to pockets of environmental injustice within Indianapolis using geographical information systems (GIS) and environmental justice mapping tools. The Multi-Layer Community Action Tool (MDCAT), developed by the Fairbanks School of Public Health at Indiana University, is a mapping tool used to analyze a combination of population and pollution indicators and return an index score for a census tract. The index score allows for comparison of pollution burden across those census tracts, giving a relative look at where the areas of environmental vulnerability are located in the city.

Brownfield sites were also scored in based on a scoring system developed by the Colorado Department of Public Health, meant to prioritize the remediation of sites. This scoring system takes into account exposure potential, contaminant characteristics, site characteristics and site's impacts on human health and local wildlife. This study geographically compares a set of 140 brownfields in Indianapolis to the individual population indicators (Sulfur Dioxide, Particulate Matter 2.5, Diesel Particulate Matter, Toxic Releases, Traffic Density, Cleanup Sites, Groundwater Threats, Hazardous Wastes, and Impaired Waters), population indicators (Age, Low Birth Weight Infants, Educational Attainment, Linguistic Isolation, Poverty, Unemployment) and the overall MDCAT index score, in order to find any correlation between these indicators and the presence and severity of brownfield sites.

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POSTER ABSTRACTS
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Investigation of the Impact of Learning Community Immersion on Chemical Hazard Communication Awareness, Knowledge and Commitment to Best Practices

Student: Brooklyn Scherer
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Institution: Walsh University

Learning communities are considered high impact practices (HIPs) which are reported to induce deeper learning and greater commitment to training principles. This study has been designed to compare the effectiveness of chemical hazard training and student commitment to best practices as a consequence of exposure to standard "content only lectures", versus additional immersion in a chemical hazards communication learning community setting. This comparison is being conducted with first and second-year college students enrolled in first-year chemistry labs. Students were randomly assigned to one of two groups, consisting of approximately thirty-five students each. Both groups were exposed to a series of identically structured lectures that focused on the safe handling and disposal of hazardous material commonly found in garages, bathrooms, laundry rooms, and garden sheds. In addition, a segment was included on the interpretation of SDS literature as well as identification and interpretation of Hazardous Material Placards. One group was assigned to attend a weekly fifteen to twenty-minute learning community meeting as well. These meetings included discussions involving safe handling and disposal questions; shared anecdotal experiences concerning the sage use of the chemicals discussed; and entertaining exercises designed to facilitate cognitive integration of practical safe handling and disposal information. Surveys measuring chemical hazard awareness were constructed and delivered prior to the training, and a scrambled version will be administered at the end of the training. In addition, a rubric-based assessment has been developed to evaluate the overall impact that participation vs. non-participation, in the learning community, has upon awareness, knowledge and commitment to best practices. The use of learning communities nationwide may impact the overall development of university students, both as students and as professionals. Currently, this study is underway and we believe that it may provide evidence regarding the efficacy of learning communities in improving student awareness and knowledge of and commitment to applying chemical hazard information and best practices.

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POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Workplace Labeling Program for Industrial Facility: OSHA Hazard Communication Program

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HazComHELP

In March 2012 OSHA promulgated a revision to 29 CFR 1910.1200 (HCS 2012) which incorporated harmonization of statement(s), pictogram(s) and signal word with the Globally Harmonized System of Classification and Labelling of chemicals (GHS) of the United Nations. Subsequently, in 2015, Canada finalized a corresponding update to WHMIS (WHMIS 2015). Both of these direct changes to workplace container labeling. This presentation will focus on HCS 2012 requirements.

- Stationary Process Containers are eligible for 'flexibility'
- Stationary and Portable containers (bulk) including railcars and trailers
- Packages: Received, Internal, Product to ship

A written HazCom Plan is a requirement, and it is expected to clearly describe the facility's strategy for complying with HCS 2012. Containers of all sizes are subject to this requirement, although there is an exemption for stationary process containers. If taking advantage of the exemption, there are criteria that must be met that include communication method and training. This presentation provides an example for production facility with containers falling in all the above categories, while taking advantage of the exemption.

The categorization of containers and procedures, as well as articulation of existing methods of meeting this aspect of the HCS (the requirement for workplace labeling was NOT NEW in 2012) are an important interim step to update the (also previously required) Written HazCom Plan. This activity enables a facility to understand its "AS IS" and more easily plan to achieve its desired "TO BE" states. It also provides content for customized training to prepare employees for potential interview questions should the facility receive an OSHA inspection.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

NCEC Incident Call (Case Study) – Philadelphia Airport White Powder

Jon Gibbard
The National Chemical Emergency Centre (NCEC), Ricardo Energy & Environment, UK

Situation – NCEC and other emergency response centres as well as companies often receive calls on 'unknown chemicals'. It is important to be able to provide advice and support first responders at the scene. For instance if a product can be linked to a producer, but the product identification information is missing, then the producer may get a call requesting immediate advice.

In this poster we will cover how advice provided by NCEC led to effective remediation and action related to a 'white powder' incident at Philadelphia Airport. We will provide information on emergency response best practice as well as specifics related to an incident involving an 'unknown chemical', for instance appropriate questioning, downgrading the seriousness, etc. thereby making it of broader relevance.

The Poster would include;

- Incident details, advice provided and lessons learned both for responders and for industry
- Remediation and action related to 'white powder incidents'
- Flow process for identifying 'unknown chemicals' on an emergency call
- How to ensure your chemical doesn't become a white powder incident, packaging, courier/haulier support etc.

This poster will help share best practice in chemical incident first response.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Global Emergency Response Regulatory Requirements

Jon Gibbard
The National Chemical Emergency Centre (NCEC), Ricardo Energy & Environment, UK

Situation - The regulations for supply and transport around the world are complex with specific countries requiring local numbers and local language responses. We will build on and update the information Jon Gibbard presented in the fall meeting highlighting the particular interface with Poison Centres and the regulations in China. We'll display the information as graphically as possible (using a map based format) and include a checklist of actions which companies need to follow in order to ensure compliance.

We will also highlight the difference between regulation and expectation to support industry making the right choices that balance complying, with meeting the needs of their customers as well as international best practice for emergency number display. We will also bring and provide our latest 'Global ER document' with the detail behind all the regulations as a takeaway.

The poster would include;

- Requirements of global emergency response regulations for supply and transport
- Overview of in-country expectation not defined by regulations
- Highlighting particular countries where regulations are more strict, or compliance is more challenging, and options to resolve
- Provide a checklist of actions for companies to take to ensure compliance
- Link to the latest information on REACH, CLP and Poison Centre compliance.

This poster will be valuable for all who export products placing them on the market anywhere around the world. Ensuring they are meeting regulatory requirements, whilst protecting their customers in the most appropriate way for their business.

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POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Multi-Modal Classification of Marine Pollutants

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The classification of a substance or mixture as a marine pollutant/environmentally hazardous substance can be derived using various criteria in the US and globally - even the very use of the term “marine pollutant” varies globally. This poster seeks to examine the similarities and differences between the DOT, ADR, RID, IATA, IMDG and ADN regulations, as they pertain to the important pre-transportation function of classification. Common concerns surrounding the declaration of marine pollutants will also be addressed, as well as best practices for declaring the technical names of the environmentally hazardous components.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

GHS: The Path to Harmonization?

Nhat Nguyen
3E Company

The UN's Globally Harmonized System of Classification and Labelling of Chemicals (GHS) has been adopted by various jurisdictions around the world as part of the chemical management and hazard communication program, which aims to ensure the safe use, transport and disposal of chemicals. The system imposes specific requirements while still allowing the various adopters to implement the so-called "building blocks" so as to fit within the existing chemical framework. The UN touted the GHS as a "basis for harmonization of rules and regulations on chemicals at national, regional and worldwide level".

Several commentators, observers and critics have opined that - in reality - these implementations have had the opposite and unintended effect of creating a fractured rather than a harmonized system. Evidence they cited includes the timing and adoption of different versions of GHS, differences in jurisdictional interpretation of differing rules, and refusal to adopt certain features of GHS by various countries. In order to determine whether such harmonization has been achieved – or lack thereof – this poster presents graphical evidence and a global examination of how GHS has been implemented. The trend suggests that although full harmonization has yet been achieved – and perhaps may never be – there seems to be a gradual path toward at least a common consensus, just not how everyone has imagined. Attendees of the poster session as well as other poster viewers will have the opportunity to learn and evaluate the building blocks, hazard classes, and timelines which have been implemented by various countries.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Printing Options for GHS Labeling - Which Method is Best for You?

Bill Sargent
Reliance Label Solutions

Even with the HazCom 2012 / GHS deadlines passed, many companies continue to struggle to meet compliance standards for GHS label output. Some chemical manufacturers and distributors have selected (and invested) in a new method of label printing, only to later find that the solution they picked may not be the optimal choice for their needs.

There are many options available today for GHS label printing. There is no single 'best' method for every company; image durability requirements, label sizes, ease of use and total cost of ownership are all important factors in hardware selection. In some instances, outsourcing the label printing may be preferable to printing on-site.

Looking at all available GHS label printing options side-by-side, along with several dozen Pros and Cons for each method, can make it easier to eliminate the print methods that absolutely will not meet minimum label requirements. Of the options that remain, the most viable will often stand out more clearly when all determining factors are applied.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Effective Use of On-Demand Print Technology for the Creation of DOT Transport Diamonds

Todd Campbell
Brandywine Drumlabels, LLC

On-demand color print platforms for GHS labeling have prevailed as the optimal choice for many organizations following the June 1, 2015 deadline. Adherence to evolving regulations, lower overall labeling costs, and shortened turnaround time are measurable benefits of the adoption of these print platforms. With the effective, efficient platforms being employed manufacturers and packagers alike are able to further leverage their devices and software to expand print on-demand utilization.

January 1, 2017 brought yet another change in regulatory requirements. The US Department of Transportation updated the graphics for transport diamonds with the implementation slated for January 1. The challenges faced by any organization using transport diamonds is ensuring all diamonds are updated, and continue to meet all aspects of DOT regulations. Regulatory compliance professionals are challenged with reviewing the updated standards and identifying a cost-effective solution. The testing protocol follows this process by referencing the applicable sections included in Title 49 Code of Federal Regulations to provide conclusive proof necessary to confirm that on-demand color laser and inkjet generated labels could meet all of these requirements.

The data indicates that the most critical steps in the process involved choosing the correct type of printing device and pairing it with a compliant label face stock. With proper due diligence, regulatory compliance professionals can be confident their company's labels meet all existing and proposed standards for the generation of DOT Transport diamonds when using color inkjet and laser generated labels.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Building a Global Workflow Process to Improve Safety Data Sheet (SDS) Cycle Time

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DuPont Product Stewardship & Regulatory (PS&R)

SCOPE: DuPont reorganized to centralize select PS&R work as a Corporate, leveraged service in Collaborative Centers (CCs) while maintaining some PS&R work within the Business Units (BUs). Prior to the re-organization, some BUs utilized Lotus Notes Work Request Databases (LN WRDB) to request and track progress of PS&R work. This approach worked well when all PS&R resources were embedded in the individual BUs. In the new structure, some resources are leveraged across multiple BUs, and the solution of stand-alone business specific work request databases and other fragmented approaches to requesting work made it difficult to understand and effectively manage the demand in the CCs. Managers in both the BUs and CCs had the need to see and pull metrics to efficiently and effectively plan and manage demand fulfillment. In addition, it was desired to move away from LN WRDBs.

GOAL: To develop in SharePoint a global, standardized PS&R Work Request process which enables efficient completion of requested work, transparency on status of requested work, and data to track key productivity metrics.

RISK: Our challenges in developing a new process centered on security concerns for proprietary information, SharePoint constraints, challenges of current practices, integration with other processes, and development and implementation of global training within the new system.

SOLUTION: A SharePoint Work Request process which can be accessed globally that meets BU requirements by providing improved visibility of supply/demand for resourcing with a robust, efficient Hazard Communication (HazCom) process leading to increased productivity, reduced cycle time, and improved customer satisfaction.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Communicating Hazard Risks Under Canada's New E2 Regulations

Jonathan D. Cocker
Baker & McKenzie LLP, Canada

Canada's overhaul of its Environmental Emergency Regulations will be completed this year, with both an additional 49 substances designed as high-risk as well as a new obligation to produce public hazard risk communications before an emergency occurs, describing:

- the possibility of an environmental emergency;
- the potential consequences of an emergency on the environment and/or human health; and
- protective and mitigation measures.

This session will look at how this can be done in light of both existing international communication standards and underlying environmental risk.

The new or enhanced measures include:

Substance Disclosures – description of the locations where the designated substances are stored, their maximum volumes and concentrations throughout the reporting period and any changes to the operation regarding the substances, as well as any change in management or control of the reporting entity;

Environmental Emergency Plans - which are to be "exercised" on a rolling 5-year basis so that all elements of the plan are tested within that period and confirmations to the Ministry of the Environment regarding such plan;

Public Notifications- before an emergency occurs, the public must be informed of:

- the possibility of an environmental emergency;
- the potential consequences of an emergency on the environment and/or human health; and
- protective and mitigation measures.

Periodic Reporting – to the Minister, which will be entered into databases accessible to Ministry and other public safety bodies.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Is It Possible to Create NAFTA-compliant SDSs and Labels? The Outlook Certainly Looks Plausible.

Jeremy Long, Katherine Sullivan, Joanne Houck, Elizabeth Dederick, PhD
Critical Path Services LLC

The ability to generate a single safety data sheet (SDS) and label for a product supplied in the United States, Canada and Mexico could facilitate trade between the North American countries and also streamline the communication of health and safety information across borders. Suppliers should be able to generate NAFTA-compliant SDSs and labels because Mexico's hazard communication NOM-018-STPS-2015 standard, United States' Hazard Communication (HazCom) 2012 standard and Canada's Workplace Hazardous Materials Information System (WHMIS) 2015 standard have all adopted the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Even though the regulations of all three jurisdictions align with GHS, there are some notable variations that must be accounted for when creating a combined SDS or label. For example, the three countries require different languages for SDSs and labels and have country-specific occupational exposure limits (OELs) reported in the SDS. Because Mexico and Canada have adopted the 5th revision of GHS while the US HazCom 2012 is currently based on the 3rd revision, there are also nuances regarding hazard classifications and GHS-specific standardized elements reported on the label and Section 2 of the SDS (i.e. the physical hazard classification and category for aerosols). The intent of this poster is to provide evidence that a NAFTA-compliant SDS and label could be authored, but there are certain requirements from US, Canada and Mexico that must be satisfied for this NAFTA-compliant SDS to be possible.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Cross-jurisdictional Considerations for Avoiding Animal Testing When Evaluating Chemical Toxicity

Jiaru Zhang, MPH
Gradient

In recent years, the push to use non-animal testing to assess chemical toxicity has become a focus of regulations, such as the 2016 Frank R. Lautenberg Chemical Safety for the 21st Century Act, an update to the Toxic Substance Control Act (TSCA). The aim of this push is to reduce number of animals used in chemical toxicity studies, refine methods and dosages to prevent unnecessary distress in test animals, and replace animal tests with trustworthy and validated non-animal methods. This poster will outline the broad regulatory landscape of chemical testing requirements and acceptance of animal testing alternatives when registering new industrial chemicals with regulatory agencies worldwide. Formulating a registration plan is the most important tool for executing a successful cross-jurisdictional testing strategy. When no human or animal data are readily available for a chemical, a combination of read-across, *in vitro* testing, quantitative structural-activity relationship (QSAR) models, weight-of-evidence analyses, and data waiving can be used to evaluate its potential toxicity. Understanding the methods and tools available as well as areas of collaboration (*e.g.*, data sharing) is vital to fulfilling registration data requirements while avoiding animal tests. This poster will summarize acceptable non-animal testing methods under the chemical compliance schemes of the US, the European Union (EU), Canada, China, Japan, and Australia. The minimum set of animal tests required for an industrial chemical manufactured in or imported into these places at a volume of ≥100,000 kg/year and a cost comparison of animal tests *versus* the non-animal test equivalents will also be presented.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Improving Read-Across for GHS Hazard Classification Using ECHA's Read-Across Assessment Framework (RAAF): Alkylbenzenes and Skin Sensitization

Charlotte Marsh, M.S., Chase Butler, M.S., Joel Cohen, Sc.D
Gradient

Using structural analogues and chemical category classification allows hazard assessors to fill data gaps and develop more comprehensive hazard assessments while decreasing the need for expensive and time-consuming animal testing. The European Chemicals Agency (ECHA) Read-Across Assessment Framework (RAAF) provides an overview of the documentation and scientific justification recommended for using read-across in an ECHA Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) dossier. Here, we present an endpoint-specific example of creating a chemical category that adheres to the RAAF Assessment Elements (AEs). Based on their structural similarities, including a lack of functional groups capable of reactivities associated with skin sensitization, we identified alkylbenzenes as a chemical class. Some, but not all, category members have data on skin sensitization available. For category members with animal data available, we identified key studies based on quality, level of detail, and relevance to the skin sensitization endpoint, and all indicated that the chemicals were non-sensitizing. Given the variety of structural and physicochemical properties (molecular weight, substitution pattern, physical properties, etc.) exhibited by these compounds, interpolating sensitization data to data-poor alkylbenzenes was deemed appropriate. To further consider common biological reactivity, we evaluated the category members for skin sensitization reactivity domains using a structure-activity relationship (SAR) program. Our findings suggest that alternative testing strategies such as read-across and SAR analysis can aid hazard classification of data-poor chemicals under the Globally Harmonized System for the Classification and Labelling of Chemicals (GHS). However, appropriate justification and documentation is critical to ensure the predictive accuracy of these strategies.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Safety Assessment for Occupational Settings: Occupational Exposure Level (OEL) Development and Exposure Modeling to Estimate Risk

Ari. S. Lewis; Daniella M. Pizzurro
Gradient

The reformed Toxic Substances Control Act (TSCA) highlights the need for a robust chemical stewardship program with increased emphasis on worker safety. While traditional monitoring programs often focus on chemicals with established occupational exposure limits (OELs) (e.g., from NIOSH or ACGIH), many industries must monitor and develop safe exposure levels for chemicals without existing authoritative OELs. Here, we present a streamlined framework to assess worker safety. A screening-level risk assessment compares derived safe levels of exposure (such as OELs) with an estimate of worker exposure to a given substance. Workplace exposures are estimated using tools from international agencies (i.e., US EPA and ECETOC). For substances that do not have established OELs, de novo OELs are derived based on a thorough evaluation of the toxicological literature to determine the critical or most sensitive endpoint and the exposure level at which the effect occurs. To derive a reliable value, further consideration is given to the human relevance of animal studies, differences in toxicity between exposure routes, and other uncertainties in the data. For a screening-level risk analysis, the derived or established OELs are compared to the estimated worker exposures for a given substance to generate a hazard quotient (HQ). If the HQ $\leq$ 1, it can be reasonably concluded that worker exposures under the defined scenario are unlikely to pose a health risk. If the HQ > 1, this indicates a potential risk to the worker based on the conservative screening-level assessment, and that more refined exposure estimates are needed to accurately characterize risk. This approach can help assess worker safety in a relatively rapid manner by eliminating concerns of health risks in specific occupational situations, or prioritizing substances for further evaluation if more refined assessments are needed.

POSTER ABSTRACTS
Spring 2017
New Orleans, Louisiana

Aligning Safety Data Sheet (SDS) Chemical Disclosure Requirements Across a Global Portfolio: A Multi-jurisdictional Approach to Ensuring Compliance and Safeguarding Confidential Business Information (CBI)

Anna Gross, M.C.P.
Gradient

As the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) is adopted by an increasing number of countries and incorporated into regional chemical disclosure regulations, both the hazard classification process and safety data sheet (SDS) format have become more standardized. This has alleviated the hazard assessment burden on chemical retail and manufacturing companies that operate in multiple countries. However, the chemical disclosure requirements for Section 3 (Composition/Information on Ingredients) of the SDS are still largely at the discretion of individual jurisdictions, or "competent authorities," with local CBI regulations taking priority over any stipulations made in GHS guidance (UN, 2015, p. 38).

For multi-national companies, simultaneous compliance with multiple disclosure requirements can pose a challenge, especially if jurisdictional portfolios are not integrated. When assessing SDS needs, it is logical to implement updates and revisions on a jurisdiction-by-jurisdiction basis, but this approach may result in discordant chemical disclosures. Even if SDS updates are implemented at different times, having a centralized process for disclosure determinations will ensure that a company's global chemical portfolio is aligned, compliant across all regions, and sufficiently safeguarded against unintended release of CBI.