Occupational Exposure to Illicit Drugs Among Library Employees

HHE Report No. 2023-0046-3415

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The Health Hazard Evaluation Program investigates possible health hazards in the workplace under the authority of the Occupational Safety and Health Act of 1970 [29 USC 669a(6)]. The Health Hazard Evaluation Program also provides, upon request, technical assistance to federal, state, and local agencies to investigate occupational health hazards and to prevent occupational disease or injury. Regulations guiding the Program can be found in Title 42, Code of Federal Regulations, Part 85; Requests for Health Hazard Evaluations [42 CFR Part 85].

Availability of Report

Copies of this report have been sent to the employer, employees, and union of the county and library system. The state health department and the Occupational Safety and Health Administration Regional Office have also received a copy. This report is not copyrighted and may be freely reproduced.

Recommended Citation

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Table of Contents

Main Report

Supporting Technical Information

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Introduction

Request

A county requested a health hazard evaluation (HHE) about unintentional exposure to illicit drugs among employees in its library system. Some of the concerns were related to smoke exposure from patrons using illicit drugs in the library restrooms.

Workplace

The library system had multiple locations throughout the county. Some were closed for renovation at the time of the request. Building and restroom configurations differed across locations. At the time of the request, approximately 500 people worked for the library system.

To learn more about the workplace, go to Section A in the Supporting Technical Information

Our Approach

Upon receiving the request, we met with county and library management representatives, union representatives, and library employees to better understand their concerns. We also reviewed incident reports and other documents. In June 2024, we visited three library locations, chosen based on factors such as the number of incidents involving illicit drug use reported, which locations were open, and restroom configurations that were similar to other locations in the library system. At each location, we did the following:

- Visually evaluated the building and its ventilation systems
- Reviewed ventilation blueprints
- Interviewed employees about work practices; 34 experiences with exposure to illicit drugs at work; knowledge, attitudes, and perceptions (KAP); and health or safety concerns about potential exposure to illicit drugs. Overall, 95 employees participated in interviews.

To learn more about our methods, go to Section B in the Supporting Technical Information

Our Key Findings

None of the restroom exhaust fans worked in one of the libraries we evaluated.

- All exhaust fans were operating in the other two libraries we evaluated.

A little over one-third of interviewed employees reported being exposed to illicit drugs through the air or uncovered skin at work over the past 12 months. Slightly over half of these employees reported symptoms.

- Of the 95 employees interviewed, 34 (36%) employees reported one or more incidents involving exposure to illicit drugs through the air or uncovered skin at work over the past 12 months.
- Of the 41 incidents described, 28 (68%) occurred in or near a restroom. Fentanyl was the most commonly suspected illicit drug (n = 27, 66%). Smoke was the most common form of the illicit drug (n = 35, 85%).
- Of the 34 employees who reported an incident, 19 (56%) reported experiencing symptoms during the incident or shortly afterwards that they attributed to illicit drug exposure. This corresponded to 22 (54%) incidents.
- A range of non-specific symptoms was reported. Headache was the most common, reported in 14 (34%) of the 41 incidents. Of note, miosis (small or pinpoint pupils), stopped breathing, or loss of consciousness, which are associated with severe opioid toxicity, were not reported in any of the incidents.

Employees see illicit drug use in the library as a major problem that increases their level of job stress

- Over half of employees (52/94; 55%) believed they will be exposed to illicit drug use at work, and most (67/90; 69%) believed smelling smoke from illicit drugs is dangerous to their health.
- Most employees (65/91; 71%) believed they are likely to experience workplace violence due to illicit drug use in the library.
- Only approximately one-third (31/89; 35%) of employees believed the library's guidance for responding to illicit drug use events is effective in eliminating potential exposures to illicit drug smoke.
- Most employees believe they cannot overdose from touching illicit drugs (83/90; 92%) or used paraphernalia (80/92; 87%). Most (54/87; 62%) disagreed with the statement that they are at risk for long-term health effects from exposure to illicit drugs at work.

To learn more about our results, go to Section B in the Supporting Technical Information

Our Recommendations

The Occupational Safety and Health Act requires employers to provide a safe workplace.

Potential Benefits of Improving Workplace Health and Safety:	
↑ Improved worker health and well-being	↑ Enhanced image and reputation
↑ Better workplace morale	↑ Superior products, processes, and services
↑ Easier employee recruiting and retention	↑ Increased overall cost savings

The recommendations below are based on the findings of our evaluation. For each recommendation, we list a series of actions you can take to address the issue at your workplace. The actions at the beginning of each list are preferable to the ones listed later. The list order is based on a well-accepted approach called the "hierarchy of controls." The hierarchy of controls is a way of determining which actions will best control exposures. In industrial settings the preferred approach is to eliminate hazards or to replace the hazard with something less hazardous (i.e., substitution). Installing engineering controls to isolate people from the hazard is the next step in the hierarchy. Until such controls are in place, or if they are not effective or practical, administrative controls and personal protective equipment might be needed. Read more about the hierarchy of controls at https://www.cdc.gov/niosh/hierarchy-of-controls/about/index.html.

We encourage the library and county to use a health and safety committee to discuss our recommendations and develop an action plan. Both employee representatives and management representatives should be included on the committee. Helpful guidance can be found in *Recommended Practices for Safety and Health Programs* at https://www.osha.gov/safety-management.

Recommendation 1: Improve the ventilation in library restrooms.

Why? Building codes usually require public restrooms to have mechanical ventilation systems that include exhaust fans to remove odors and moisture. Maintaining building ventilation and differential pressure are important strategies to (1) maintain indoor air quality, (2) reduce the potential spread of infectious diseases, and (3) reduce the movement of odors from restrooms into surrounding spaces.

How? At your workplace, we recommend these specific actions:

Inspect all restroom exhaust fans to ensure they are operating in accordance with ASHRAE guidelines.

- The county's building code may specify the minimum airflow rates for restroom exhaust fans, often measured in cubic feet per minute (CFM). These rates can vary based on the size of the restroom and the number of fixtures.

- American National Standards Institute (ANSI)/ASHRAE 62.1-2022 recommends that public restroom exhaust fans flow a minimum of 50 CFM. This can be achieved with a demand-controlled or continuous exhaust fan. In some cases, exhaust fans may be required to operate continuously or be controlled by a timer or humidity sensor to ensure effective ventilation. According to ANSI/ASHRAE 62.1-2022:
    - Demand-controlled exhaust fans
        - Must provide at least 50 CFM for restrooms
        - Must have a manual on/off control or an automatic control that does not impede the manual on control
    - Continuous exhaust fans
        - Must provide at least 20 CFM for restrooms
        - Must have a manual on/off control
- Building code typically outlines where exhaust air must be discharged, ensuring it does not vent into other occupied spaces or near building ventilation air intakes.

Consult with a qualified ventilation contractor to ensure that existing heating, ventilation, and air-conditioning systems are functioning as designed and that all occupied spaces are receiving an adequate amount of outdoor air, keeping in mind available guidelines.

- We recommend a test and balance be performed every 5 to 7 years to ensure heating, ventilation, and air conditioning systems continue to operate as designed.
- We also recommend a test and balance be performed when significant changes occur in the areas these systems serve (e.g., renovations, remodeling, number of occupants, type or amount of equipment used by workers, nature of work performed, and overall size of the space).

Recommendation 2: Offer additional training for employees on responding to incidents where there is suspected illicit drug use in the library

Why? Training, guidance, and management support were the resources employees reported they would like their employer to provide. Trainings can prepare library employees for incidents involving illicit drugs and help them understand what to do to protect themselves and patrons and potentially save lives. Feeling better prepared for incidents involving illicit drugs may decrease anxiety and job stress. By providing comprehensive training that covers these areas, individuals will be better equipped to respond effectively during instances when illicit drug use is suspected in the library.

How? At your workplace, we recommend these types of training:

Emergency response protocols

- Topics may include library standard operating procedures for responding to suspected illicit drug use, understanding illicit drugs and their effects, recognizing signs of overdose, naloxone administration, and basic life support.
- Identify potential improvements in how staff communicate information to persons-in-charge (PICs) about situations involving illicit drugs in the library, so they can take steps to protect themselves before arriving to address the situation.

Resiliency and self-care

- These programs often focus on enhancing knowledge, self-efficacy, and practical skills necessary for effective intervention during situations where illicit drug use is suspected.
- Self-care training often incorporates self-efficacy theories and practical training to empower individuals to manage their health more effectively.
- Examples of resources for resiliency and self-care can be found at:
    - The American Psychological Association https://www.apa.org/topics/resilience/building-your-resilience.
    - Mental Health America: https://mhanational.org/ten-tools.

Workplace violence prevention and de-escalation

- NIOSH offers an online workplace violence prevention course for nurses, elements of which may be adaptable to other working populations. https://www.cdc.gov/niosh/docs/2013-155/.
- Hands-on practice through simulations or role-playing scenarios may build confidence in responding to real-life situations.

Stigma awareness

- Topics may include understanding the social stigma surrounding drug use and overdose and promoting empathy in interactions with affected individuals
- For example, the National Library of Medicine offers training in stigma, trauma, and people who use drugs at https://www.nnlm.gov/training/class/stigma-trauma-and-people-who-use-drugs-part-1.

Recommendation 3: Use employee input to guide efforts in improving worker safety, health, and well-being

Why? Monitoring employee concerns, satisfaction, and well-being is useful for finding areas of focus for intervention and improvement. Engaging employees and asking for their input about work builds trust and morale when they feel their input is valued and useful for improving working conditions.

How? At your workplace, we recommend these specific actions:

Obtain employee input about psychosocial factors and job stress. Use the results to inform the development or revision of interventions, policies, and practices in the workplace to improve employee safety and health.

- Use the interview results from this health hazard evaluation to guide and monitor improvement efforts in areas of concern to employees.
- Encourage employees to seek help from a qualified health professional if they are experiencing symptoms of anxiety, stress, or other mental health issues that interfere with the social, occupational, or other areas of their lives.

Recommendation 4: Improve the bloodborne pathogen exposure prevention program

Why? Although not the focus of our evaluation, we observed a needle stuck in the ceiling tile in a library restroom. Additionally, in some incident reports we reviewed, we noted the potential for bloodborne pathogen exposure. These hazards could cause harm to workers' health and safety and should be addressed. The Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens standard applies to workplaces where workers can be reasonably anticipated to come into contact with blood or other potentially infectious materials.

How? At your workplace, we recommend these specific actions:

Identify and include employees with reasonably anticipated exposure to blood or potentially infectious materials in the Bloodborne Pathogen Exposure Control Plan and ensure the plan complies with OSHA requirements

Provide initial training upon hire and annual refresher training to employees with potential for occupational exposure to bloodborne pathogens

Supporting Technical Information

Occupational Exposure to Illicit Drugs Among Library Employees

HHE Report No. #2023-0046-3415

May 2025

Section A: Workplace Information

Library System

The library system had 19 locations, which included a central library and 18 locations in neighborhoods around the county. The library system serves a population of approximately 800,000 individuals. At the time of the evaluation, several locations were closed for renovation.

Library Locations

Our evaluation was conducted at three locations:

Library A

Originally constructed in 1913, this library is a 320,000 square feet (sf) building with four floors, a basement, and sub-basement. The library has undergone several renovations and expansions to modernize its facilities while preserving its historic character. A significant renovation took place during 1995–1997, which updated the library's interior and improved accessibility. These renovations included enhancements such as updated technology infrastructure, improved lighting, new furnishings, and additional meeting spaces. The library also underwent a refresh in 2023. Throughout these changes, efforts have been made to maintain the building's historical integrity and architectural details.

The public restroom on the ground floor consisted of a newly remodeled all-user restroom. This 650 sf restroom is an open design with 10 stalls containing toilets, each with its own door and exhaust fan, which are completely closed off from the common restroom area. These fans appeared to be operating in continuous mode. In addition, there were two smaller restrooms (58 and 84 sf) in the Teen Library area with exhaust fans serving stalls and the restroom itself. These fans appeared to be demand-controlled.

There were additional men's and women's restrooms on the second and third floor landings. The second-floor men's (137 sf) and women's (163 sf) restrooms had one to two stalls with an exhaust fan for each stall and one for the restroom itself. The third-floor men's (133 sf) and women's (169 sf) restrooms also had one to two stalls with an exhaust fan for each stall and one for the restroom itself. These fans appeared to be demand-controlled.

Library B

Constructed in 2010, the library is part of a four-story multi-use building. The library has approximately 20,000 sf of space. The design features a modern architectural style with an emphasis on sustainability and community engagement.

The public restrooms consisted of men's (211 sf) and women's (223 sf) restrooms, each with exhaust fans for the stalls and the restroom itself. These fans appeared to be operating in continuous mode.

Library C

Originally constructed in 1924, the library was expanded in 1937 and then again in 2000, nearly doubling the library's original capacity to approximately 15,000 sf. It is a one-story brick and stone

building with a partial basement and crawlspace. Routine maintenance and minor renovations have been made to keep the library up to date with community needs and technological advancements. Efforts have been made to ensure that the library remains accessible to all patrons. Renovation of this library began in September 2024.

The public restrooms consisted of two private all-user restrooms (55 and 40 sf), each with one toilet and exhaust fan. The fans appeared to be demand-controlled.

Employee Information

At the time of the evaluation, approximately 500 people worked for the county's library services department. They were represented by a union. Employees of a security service contracted to work with library staff to maintain safety also participated in the evaluation. The company that provided janitorial services chose not to participate in the evaluation.

The library had part-time and full-time employees. Work hours also varied because the hours that each location was open to the public varied by the day of the week.

History of Issue at Workplace

The county requested the HHE because of concerns about exposure to smoke from illicit drugs in public spaces since smoking has become a more common way that people use drugs. The number of overdose deaths from synthetic opioids like fentanyl had increased substantially in the county and state [Centers for Disease Control and Prevention 2024] from 2020–2023.

Process Description

Most library staff spent at least some time in public-facing roles assisting patrons. They rotated tasks every hour. For example, employees can move from staffing a particular service desk to another point of service, or to processing materials, such as checking library materials in or out and shelving materials, which can take place in public areas of the library. Some employees also interacted with the public through various library programming or outreach activities.

Each location also had staff serving in person-in-charge (PIC) roles. A PIC's duty is to help people use the library while maintaining a safe and welcoming environment, which includes responding to various types of incidents that might affect library operations. Usually this was a library administrator on duty. Staff can also opt-in to receive additional training and serve in PIC shifts.

Some of the behaviors considered library rule violations include:

- Engaging in activity that violates federal, state, local, or other applicable law
- Engaging in conduct that disrupts or interferes with the normal operation of the library, or disturbs library staff or patrons
- Using any tobacco, vaping, or cannabis product while on library premises
- Improperly using library restrooms including any activity that prevents other patrons from using the facilities.

Library and security personnel can ask persons who violate library rules to leave the premises. Those who violate rules can also be excluded from all library locations and lose library privileges until the violation is corrected or for varying time periods, depending on the violation.

Section B: Methods, Results, and Discussion

Our evaluation objectives were to:

- Visually evaluate the library and the ventilation systems
- Characterize incidents of illicit drug exposure in the library and symptoms related to such incidents
- Understand employees' concerns and knowledge, attitudes, and perceptions (KAP) of the risk of experiencing health effects from exposure to illicit drugs while working in the library
- Make recommendations on how to prevent or minimize exposures to illicit drugs or their effects among library employees

Methods: Workplace Assessment

Visual Inspection of Restroom Exhaust Fans

We visually inspected every exhaust fan in all public restrooms to evaluate their condition and operation. Fan motors and roof exhausts were inspected when accessible. We used a fine talc powder to visually observe fan operation, air current patterns, and air flow direction. We also used the powder to determine if restrooms were positively or negatively pressurized when compared to surrounding areas.

Evaluation of Building Heating, Ventilation, and Air Conditioning (HVAC) Systems

Facility maintenance staff provided access to all areas of the building for our inspection, provided access to the roof (when possible) where we were able to inspect the building HVAC units, and provided ventilation schematics for our review. We visually inspected all accessible building HVAC systems. We reviewed HVAC maintenance schedules, filter replacement schedules, and filter minimum efficiency reporting value (MERV) ratings.

Results: Workplace Assessment

Library A

Visual Inspection of Restroom Exhaust Fans

All restroom fans were operating and appeared in good condition. The recent renovation involved replacing all the fans on the ground floor all-user restroom.

Qualitative Evaluation of Air Flow of Restrooms

All restrooms were negatively pressurized compared to surrounding areas. This means air flowed into restrooms, as designed.

Evaluation of Building HVAC Systems

All HVAC units appeared in good condition and contained filters rated at MERV 13. The library itself was positively pressurized, when compared to the outside.

Library B

Visual Inspection of Restroom Exhaust Fans

All restroom fans were operating and appeared in good condition.

Qualitative Evaluation of Air Flow of Restrooms

All restrooms were negatively pressurized compared to surrounding areas. Some employees at this location were concerned that the public restroom fans were not operating, due to the presence of odors that came from the restrooms. We used a fine talc powder to visually demonstrate fan operation, air current patterns, and air flow direction. Employees who saw this demonstration said they were happy to see the fans were operating.

Evaluation of Building HVAC Systems

All HVAC units appeared in good condition and contained filters rated at MERV 13. The library itself was positively pressurized compared to the outside.

Library C

Visual Inspection of Restroom Exhaust Fans

None of the restroom fans were operating, though they appeared in good condition.

Qualitative Evaluation of Air Flow of Restrooms

Because fans were not operating, there was no air movement into or out of any restrooms in this library.

Evaluation of Building HVAC Systems

All HVAC units appeared in good condition and contained filters rated at MERV 13. The library itself was positively pressurized compared to the outside.

Methods: Exposure Incidents

We gathered information about exposure incidents through (1) document review and (2) confidential employee interviews.

Document Review

Incident Reports

To help identify library locations for site visits, in March 2023 the library performed a query of their security incident reporting system for relevant incidents in recent years. The most common "Action Reason" for a security incident report was "Improper use of Restrooms," which can include incidents related or unrelated to drug use. Incidents categorized as "Improper Use of Restrooms" were categorized by library location. Of the top 6 locations over the period of January 2011–March 2023, three locations (including Library A) were closed for renovation at the time of the query in March 2023. The library shared the query results for January 2020–March 2023 at the top 3 locations that were not closed for renovation: Locations B, C, and D. We reviewed descriptions of "Improper Use of Restrooms" incidents for these three locations during January 2020–March 2023.

Based on the description of each incident, we categorized it as whether it involved the following characteristics:

- Mention of an illicit drug or smoke
- Mention of tobacco or cannabis
- Potential for bloodborne pathogen exposure
- Issuance of an exclusion or the presence of a previously excluded person
- Mention of verbal abuse, physical assault, or violence towards library property.

PIC Training

We reviewed descriptions of the training that PICs receive that non-PIC staff do not receive. We also reviewed the PIC Training Participant Guide that accompanied the PIC training class (undated) and the library's opioid overdose response policy (December 2023).

Employee Interviews

We asked the library system to schedule a time for all employees working at Location A, B, or C on the day(s) we visited to participate in confidential interviews. Interviews were conducted in rooms that provided privacy. We described the interview to the employee and asked if they would like to voluntarily participate in the interview. Participating employees verbally consented. Most interviews took approximately 20 minutes to complete.

During the interview, we discussed work and demographic characteristics, responding to suspected illicit drug use at the library in the past 12 months, and whether the employee had experienced any of the following exposure scenarios while working at the library in the past 12 months:

- Uncovered skin coming into contact with suspected illicit drugs
- Eyes or mouth coming into contact with suspected illicit drugs
- Being around airborne suspected illicit drugs
- Breathing in suspected illicit drug smoke that was visible

If an employee answered "yes" to any of these four potential exposure scenarios, we asked additional questions about the incident, including any health symptoms experienced. If the employee reported multiple incidents for each type of potential exposure scenario, we focused questions on the incident that the employee considered the most severe or "worst case" for each type.

We used R versions 4.4.0 and 4.4.1, SPSS version 29.0.2.0, and Microsoft Excel for Microsoft 365 for statistical analyses. To evaluate if there were statistically significant differences between employees by various characteristics, we used Fisher's exact test for categorical variables and the Mann-Whitney U test for continuous variables. We considered $P = 0.05$ to indicate a statistically significant difference.

Other interview topics and results are presented later in this report.

Results: Exposure Incidents

Document Review

Incident Reports

At Locations B–D, there were 43 "Improper use of Restrooms" incidents during January 2020–March 2023, of which 39 (91%) occurred at Locations B and C, where we visited. However, review of the incident descriptions showed that not all of them occurred within a restroom. For example, an incident might involve a person previously excluded from the library due to a restroom-related incident.

Of the 43 incidents reviewed, 9 (21%) involved an illicit drug. None included mention of naloxone administration. An additional 4 (9%) incidents involved use of cannabis or tobacco, which are not permitted on library premises. In one incident, a library staff member described experiencing symptoms after entering a restroom with the smell of illicit drug smoke and disposing of paraphernalia left behind. The staff member did not need medical attention.

In 10 (23%) incidents, there was potential for bloodborne pathogen exposure. Thirty (70%) incidents involved the issuance of an exclusion or an interaction with a previously excluded person.

Of the 43 incidents reviewed, 12 (28%) involved verbal abuse of a library employee, and of those 12 incidents, 4 (33%) also included physical assault of the employee. One instance of physical assault also included violence towards library property.

PIC Training

PICs receive 3 days of classroom training and 8 hours of shadowing with an experienced PIC or Library Safety Coordinator. The PIC training and participant guide included the following topics: PIC basics, staff supervision and performance, customer service, recognizing and mitigating bias, accidents/incidents, library rules, exclusions, personal safety and de-escalation, facilities/operations issues, working with security and other primary responders, working with other agencies, emergencies, other PIC issues, and documentation. PICs who are also managers undergo required training in naloxone administration. Non-managers, including those who serve as PICs, can undergo optional naloxone training. According to the library's opioid overdose policy, naloxone kits are available and with inventories maintained at each library location. We were shown naloxone kits at the locations we visited. During the year of the evaluation, the library provided training in cardiopulmonary resuscitation (CPR), first aid, and automated external defibrillator (AED) use for any employee who serves as a PIC.

Employee Interviews

Work and Demographic Characteristics

Of the 98 employees invited for interviews, 95 (97%) participated across the three locations.

Among participating employees, the median job tenure in the library system was 7.5 years (range: <1–12 years). Employees worked for a median of 40 hours per week (range: 20–50 hours per week). Most employees reported that they typically worked at the location where they were interviewed.

Job titles for the interviewed employees are summarized in Table C1. Forty-four (46%) employees reported having served as a PIC in the last 12 months.

The median age of interviewed employees was 47 years (range: 23–70; n = 93) and 57 (60%) were female. Other demographic characteristics of the interviewed employees are summarized in Table C1.

Responding to Suspected Drug Use

Fifty-nine (62%) employees reported that they had responded to suspected illicit drug use while working in the library (Table C2). Among these 59 employees, 37 (63%) of employees reported responding to suspected illicit drug use at least monthly.

Exposure Incidents

The employees' descriptions of the incidents showed that it was difficult to distinguish between being around airborne illicit drugs and illicit drug smoke. As a result, we combined these two categories as "through the air" in the subsequent analysis.

Thirty-four (36%) employees reported experiencing one or more of the following exposure scenarios in the past 12 months: uncovered skin coming into contact with suspected illicit drugs (n = 3, 3%) and through the air (n = 33, 35%). These categories are not mutually exclusive because some employees reported more than one type of exposure scenario. No employee reported their eyes or mouth had come into contact with suspected illicit drugs.

The most common job titles among the 34 employees who reported experiencing an exposure scenario were Library Assistant (38%, n = 13) and Library Access Services Assistant (38%, n = 13). Nearly half of employees who reported experiencing an exposure scenario had served as PIC in the past 12 months (47%, n = 16). Employees who reported typically working at Location C were more likely to have reported experiencing an exposure scenario (80%) than employees who reported typically working at a different library location (31%) ($P = 0.004$).

Among employees who reported exposure scenarios involving skin contact, 1–4 incidents over the 12 past months were reported. Employees who reported exposure scenarios through the air stated that the number of incidents ranged from 1 in the past 12 months to "a lot" or "daily" outside near or on library property.

The 34 employees who reported experiencing an exposure scenario were asked to describe the incident or the most severe or "worst case" incident for each type, of which there were 41 incidents: 3 (7%) involving skin contact and 38 (93%) involving exposure through the air.

Fentanyl was the most commonly suspected illicit drug across the incidents (n = 27, 66%) (Table C3). Smoke was the most common form of the illicit drug (n = 35, 85%) (Table C4). Most incidents occurred in or near a restroom (n = 28, 68%); the second most common location was outside on or near library property (n = 7, 17%).

During most incidents, employees were not wearing personal protective equipment. Table C5 shows the distribution of responses.

Of the 34 employees who reported experiencing one or more exposure scenarios, 19 (56%) reported experiencing symptoms during the incident or shortly afterwards that they attributed to illicit drug exposure, which corresponded to 22 (54%) of the 41 reported incidents.

The most common symptom was headache (n = 14), which was reported in 64% of incidents with at least 1 symptom reported (Figure B1). Of note, miosis (small or pinpoint pupils), stopped breathing, or loss of consciousness, which are associated with severe opioid toxicity, were not reported in any of the incidents. Among incidents associated with symptoms, the symptoms began immediately or up to 20 minutes following the incident. Symptoms lasted less than 24 hours in 19 (86%) of 22 incidents where at least 1 symptom was reported.

Of the 19 employees who reported experiencing symptoms, 3 (16%) reported missing several hours to days of work after exposure incidents. One (5%) of 19 employees who experienced symptoms reported seeking medical attention about the symptoms; no specific diagnosis was given.

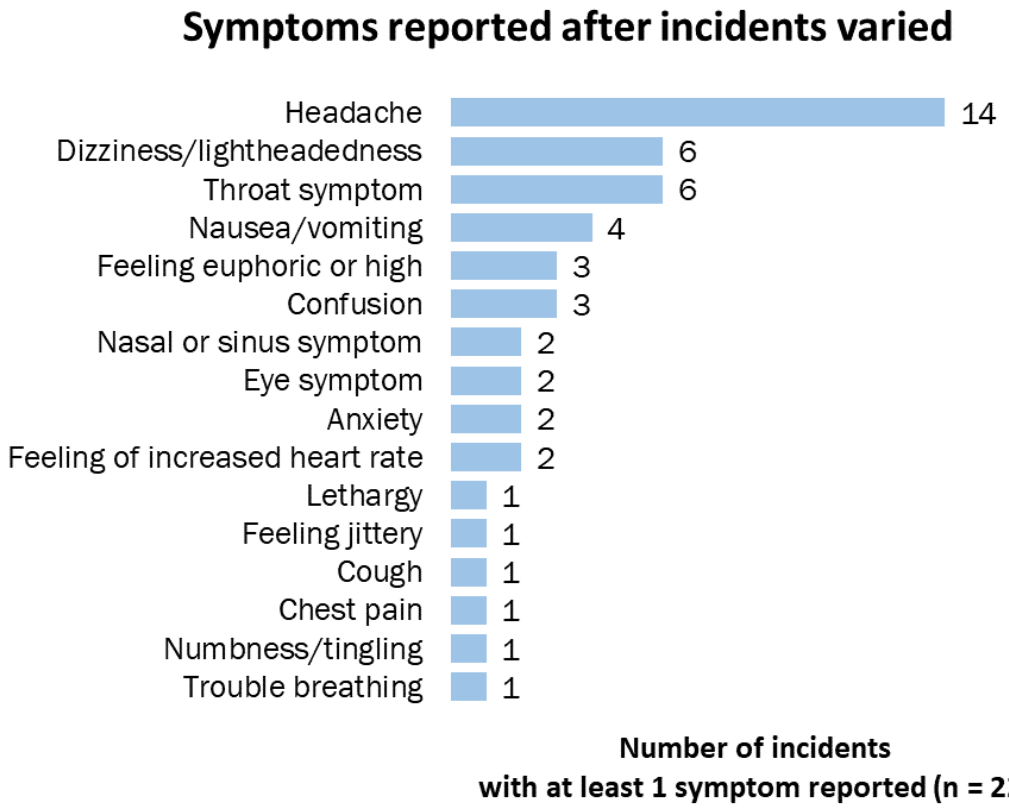


Figure B1. Symptoms reported by interviewed employees in 22 incidents with at least 1 symptom reported

Methods: Knowledge, Attitudes, and Perceptions (KAP)

KAP Scaled Items

The interview included scaled items that were developed specifically for this evaluation. Each of these items contained a statement about KAP regarding illicit drug use in the library followed by the following options: strongly agree, agree, disagree, and strongly disagree. We summarized responses using descriptive statistics.

We created dichotomous variables by grouping "strongly agree" and "agree" responses together ("agree") and "disagree" and "strongly disagree" responses together ("disagree") for non-parametric analysis. We used Fisher's exact tests to determine whether there were statistically significant differences

between those that agreed with the KAP items compared to those that disagreed with the KAP items when considered by:

- PIC status (yes/no)
- Having concerns about exposure to illicit drugs in the workplace (yes/no)
- Increased job stress due to illicit drug use in the library (agree/disagree)
- Increased anxiety due to the potential of being exposed to illicit drugs in the library (agree/disagree)

What to Do, Training, and PPE Access

We asked interview participants about (1) their understanding of what to do and (2) whether they had training or guidance from the library about what to do in the following situations:

- If illicit drug use was suspected in the library
- If one came into contact with illicit drugs

Those who reported receiving training on these topics were asked whether they thought the training was adequate. We also asked interview participants about whether they had access to gloves and N95® respirators at work.

We performed descriptive analysis of the responses to these questions. Two NIOSH team members grouped the open-ended responses into common themes individually and discussed any differences in groupings until they came to consensus. Each employee's response might have been grouped into one or more themes. We tallied these results.

Concerns

We asked interview participants if they had any concerns about exposure to illicit drugs in the workplace. Those who replied "yes" were asked to describe their main concerns.

Two NIOSH team members grouped these open-ended responses into common themes individually and discussed any differences in groupings until they came to consensus. Each employee's response might have been grouped into one or more themes. We tallied these results.

Desired Support or Resources

We asked interview participants if they felt that their workplace provides adequate support or resources to address concerns related to staff being exposed to illicit drugs. Those who responded "no" were asked what kinds of support or resources they would like their employer to provide.

Two NIOSH team members grouped the open-ended responses into common themes individually and discussed any differences in groupings until they came to consensus. Each employee's response might have been grouped into one or more themes. We tallied these results.

Results: KAP

KAP Scaled Items

Figure B2 includes descriptive results of the KAP items. Most (71/93; 76%) employees agreed with the statement that people using illicit drugs in the library is a major problem, and about half (52/94; 55%) agreed that they are likely to be exposed to illicit drugs while at work. Most (62/90; 69%) believed that smelling smoke from illicit drugs is dangerous to their health, most (67/90; 74%) believed they were exposed to illicit drugs if they enter a space where smoke from illicit drugs can be smelled or seen.

About a third of responding employees (31/92; 34%) disagreed that it is possible to protect themselves from exposure to illicit drug smoke at work. Most (54/87; 62%) disagreed with the statement that they are at risk for long-term health effects from exposure to illicit drugs at work.

Most employees disagreed with statements about the potential of overdosing from touching illicit drugs (83/90; 92%) or used paraphernalia (80/92; 87%). Two-thirds of employees (62/94; 66%) reported that they would likely intervene if they suspected someone was using illicit drugs in the library. However, only approximately one-third (31/89; 35%) believed the library's guidance for responding to illicit drug use is effective in eliminating potential exposure to illicit drug smoke.

Most (65/91; 71%) reported they were likely to experience workplace violence due to the use of illicit drugs in the library. Eighty percent (76/95) reported that illicit drug use in the library increases their level of job stress, and nearly half (43/94; 46%) reported the potential of being exposed to drugs causes them anxiety.

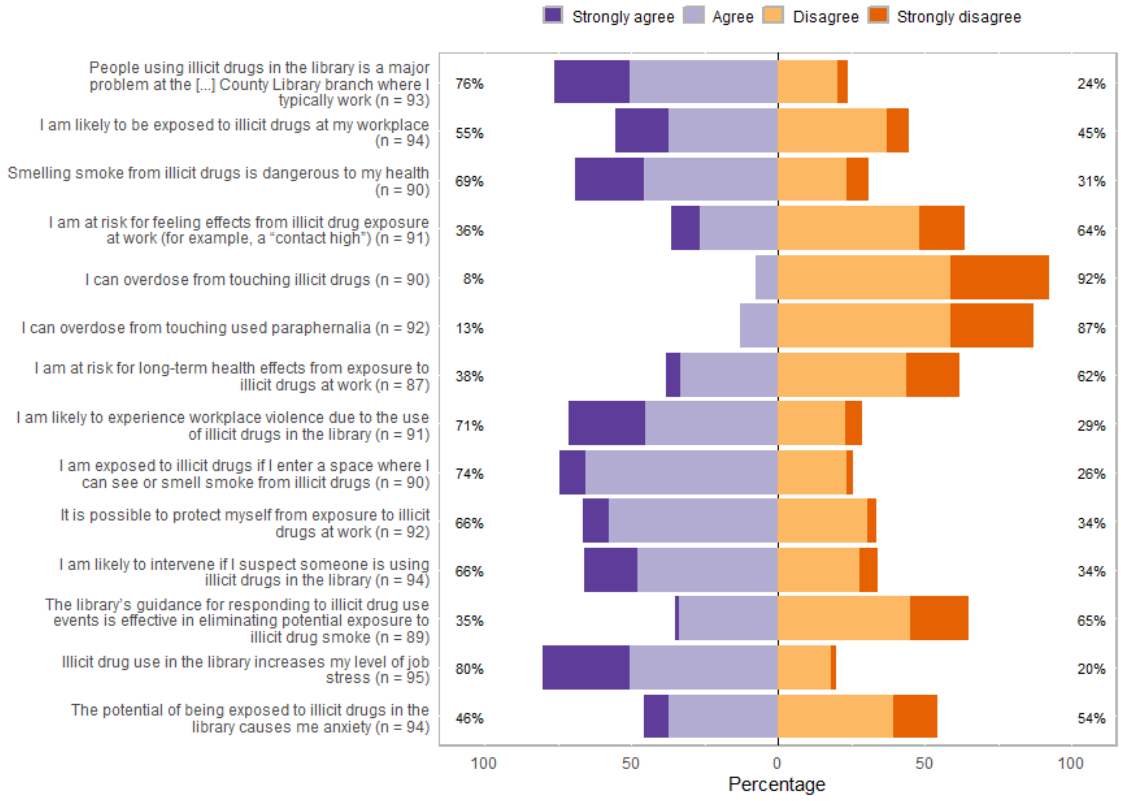


Figure B2. Responses to KAP items. The percentage on the left of the horizontal bar is the sum of percentages of interviewed employees who strongly agreed and agreed with the statement. The percentage on the right is the sum of percentages of interviewed employees who strongly disagreed and disagreed with the statement.

KAP Items by PIC Status (Yes/No)

We compared PIC status between those who agreed with the KAP statement and those that disagreed with the KAP statement.

Library workers agreeing with the following statement were significantly more likely to be a PIC than those that disagreed with the statement.

- I am likely to intervene if I suspect someone is using illicit drugs in the library (57% vs. 25%, $P = 0.005$)

Library workers agreeing with the statement _____ were significantly less likely to be a PIC than those that disagreed with the statement _____.

- People using illicit drugs in the library is a major problem at the [...] County library branch where I typically work (39% vs. 73%, $P = 0.008$)
- Smelling smoke from illicit drugs is dangerous to my health (39% vs. 64%, $P = 0.039$)
- I am at risk for long-term health effects from exposure to illicit drugs at work (30% vs. 56%, $P = 0.027$)
- I am likely to experience workplace violence due to the use of illicit drugs in the library (35% vs. 77%, $P < 0.001$)
- I am exposed to illicit drugs if I enter a space where I can see or smell smoke from illicit drugs (42% vs. 70%, $P = 0.029$)

Library workers who agreed that illicit drug use in the library is a major problem had a significantly lower likelihood of being a PIC than those who disagreed with the statement. Additionally, those that believed that being exposed to illicit drugs posed a risk to their health were significantly less likely to be a PIC than those that disagreed with the statement. Those agreeing with the statement that they will encounter workplace violence due to illicit drug use in the library were significantly less likely to be PICs compared to those that disagreed with the statement.

In summary, library workers agreeing with statements related to negative health or safety issues were significantly less likely to be PICs than those that disagreed with the statements.

Bivariate analyses showed there was no difference in whether one was a PIC by age ($P = 0.13$) or whether one was exposed to illicit drug smoke at work ($P > 0.90$). Respondents who reported being a PIC had been working in the library system significantly longer than those who did not report being PICs (median job tenure of PICs, 149 months; median job tenure of persons who were not PICs, 48 months; $P = 0.003$).

KAP Items by Concerns (Yes/No)

We compared whether one reported concerns about exposure to illicit drug smoke in the workplace between those who agreed with KAP statements and those that disagreed with KAP statements.

Library workers agreeing with the statement _____ were significantly more likely to have concerns about exposure to illicit drugs in the workplace than those that disagreed with the statement_____.

- People using illicit drugs in the library is a major problem at the [...] County library branch where I typically work (64% vs. 32%, $P = 0.013$)
- I am likely to be exposed to illicit drugs at my workplace (77% vs. 27%, $P < 0.001$)
- Smelling smoke from illicit drugs is dangerous to my health (68% vs. 25%, $P < 0.001$)
- I am at risk for feeling effects from illicit drug exposure at work (85% vs. 35%, $P < 0.001$)
- I am at risk for long-term health effects from exposure to illicit drugs at work (76% vs. 37%, $P < 0.001$)
- I am likely to experience workplace violence due to the use of illicit drugs in the library (72% vs. 15%, $P < 0.001$)
- I am exposed to illicit drugs if I enter a space where I can see or smell smoke from illicit drugs (66% vs. 27%, $P = 0.003$)
- Illicit drug use in the library increases my level of job stress (68% vs. 5%, $P < 0.001$)
- The potential of being exposed to illicit drugs in the library causes me anxiety (88% vs. 26%, $P < 0.001$)

Library workers agreeing with the statement _____ were significantly less likely to have concerns about exposure to illicit drugs in the workplace than those that disagreed with the statement _____.

- It is possible to protect myself from exposure to illicit drugs at work (48% vs. 71%, $P = 0.047$)
- The library's guidance for responding to illicit drug use events is effective in eliminating potential exposure to illicit drug smoke (37% vs. 62%, $P = 0.027$)

Library workers agreeing with KAP statements indicating concerns related to health and safety within the workplace were significantly more likely to report they have concerns about exposure to illicit drugs in the library than those who disagreed with the statements. Those reporting a positive view of one's ability to protect oneself from exposures and the effectiveness of the library's guidance for responding to illicit drug use events were less likely to report concerns about illicit drug use in the library than those with less favorable views.

KAP Items by Anxiety (Agree/Disagree)

We compared whether one reported that the potential of being exposed to illicit drugs in the library causes them anxiety between those that agreed with each KAP statement and those that disagreed with the KAP statement.

Library workers agreeing with the statement _____ were significantly more likely to report that being exposed to illicit drugs in the library causes them anxiety than those that disagreed with the statement _____.

- People using illicit drugs in the library is a major problem at the [...] County library branch where I typically work (57% vs. 14%, $P <0.001$)

- I am likely to be exposed to illicit drugs at my workplace (73% vs. 14%, $P < 0.001$)
- Smelling smoke from illicit drugs is dangerous to my health (66% vs. 7%, $P < 0.001$)
- I am at risk for feeling effects from illicit drug exposure at work (85% vs. 22%, $P < 0.001$)
- I am at risk for long-term health effects from exposure to illicit drugs at work (75% vs. 24%, $P < 0.001$)
- I am likely to experience workplace violence due to the use of illicit drugs in the library (63% vs. 8%, $P < 0.001$)
- I am exposed to illicit drugs if I enter a space where I can see or smell smoke from illicit drugs (55% vs. 22%, $P = 0.008$)
- Illicit drug use in the library increases my level of job stress (57% vs. 0%, $P < 0.001$)

Library workers agreeing with the statement _____ were significantly less likely to report that being exposed to illicit drugs in the library causes them anxiety than those that disagreed with the statement _____.

- The library's guidance for responding to illicit drug use events is effective in eliminating potential exposure to illicit drug smoke (26% vs. 58%, $P = 0.007$)

Library workers that agreed with KAP statements about potentially experiencing negative health or safety issues were significantly more likely to report that being exposed to illicit drugs in the library causes them anxiety than those that disagreed with the statements. Those who reported that they are being exposed to illicit drug smoke at work and that smelling illicit drug smoke is a dangerous exposure incident were also more likely to report anxiety. Library workers that reported the library's guidance for eliminating potential exposure to illicit drugs is effective were less likely to report anxiety than those that believed the guidance is ineffective for eliminating potential exposure to illicit drugs.

Bivariate analyses showed no significant differences between males and females ($P = 0.37$) or in age ($P = 0.30$) or job tenure ($P = 0.25$) between the employees that reported that being exposed to illicit drugs in the library causes them anxiety than those that did not report anxiety. Those who reported being exposed to illicit drugs at work were more likely to report anxiety than those that did not report being exposed to illicit drugs at work ($P < 0.01$).

KAP Items by Job Stress (Agree/Disagree)

We compared whether one reported that illicit drug use in the library increases their level of job stress between those that agreed with the KAP statements and those that disagreed with KAP statements.

Library workers agreeing with the statement _____ were significantly more likely to report that illicit drug use in the library increases their level of job stress than those that disagreed with the statement _____.

- People using illicit drugs in the library is a major problem at the [...] County library branch where I typically work (90% vs. 55%, $P < 0.001$)

- I am likely to be exposed to illicit drugs at my workplace (94% vs. 62%, $P < 0.001$)
- Smelling smoke from illicit drugs is dangerous to my health (90% vs. 54%, $P < 0.001$)
- I am at risk for feeling effects from illicit drug exposure at work (97% vs. 69%, $P = 0.001$)
- I am at risk for long-term health effects from exposure to illicit drugs at work (97% vs. 67%, $P < 0.001$)
- I am likely to experience workplace violence due to the use of illicit drugs in the library (94% vs. 46%, $P < 0.001$)
- The potential of being exposed to illicit drugs in the library causes me anxiety (100% vs. 63%, $P < 0.001$)

Library workers agreeing with KAP statements about potentially experiencing negative health or safety issues were more likely to report that illicit drug use in the library causes them job stress than those that disagreed with the statements. Those who reported they are exposed to illicit drugs at work and that smelling illicit drug smoke is a dangerous exposure incident were also more likely to report that illicit drug use in the library causes them stress than those that disagreed with the statements.

Bivariate analyses showed no significant differences in age ($P = 0.07$) among those reporting illicit drug use in the library increases their level of job stress. Respondents who reported that illicit drug use in the library causes them job stress had been working in the library system significantly longer than those who did not report this (median job tenure of those who agreed with the statement, 120 months; median job tenure of persons who did not agree with the statement, 30 months; $P = 0.003$). Those who reported being exposed to illicit drugs were more likely to agree that illicit drug use in the library increases their level of job stress than those that did not report being exposed to illicit drugs ($P = 0.01$).

What to Do, Training, and PPE Access

If Illicit Drug Use was Suspected in the Library

Among the 95 employees participating in an interview, 94 employees (99%) described their understanding of what to do if illicit drug use was suspected in the library; one employee (1%) said they didn't know. The most common themes among the responses are summarized in Figure B3. The most common theme was informing the PIC or security (n = 65; 69%), followed by interacting with the person with suspected illicit drug use (n = 22; 23%) and closing off the space where the suspected illicit drug use occurred (n = 18; 19%).

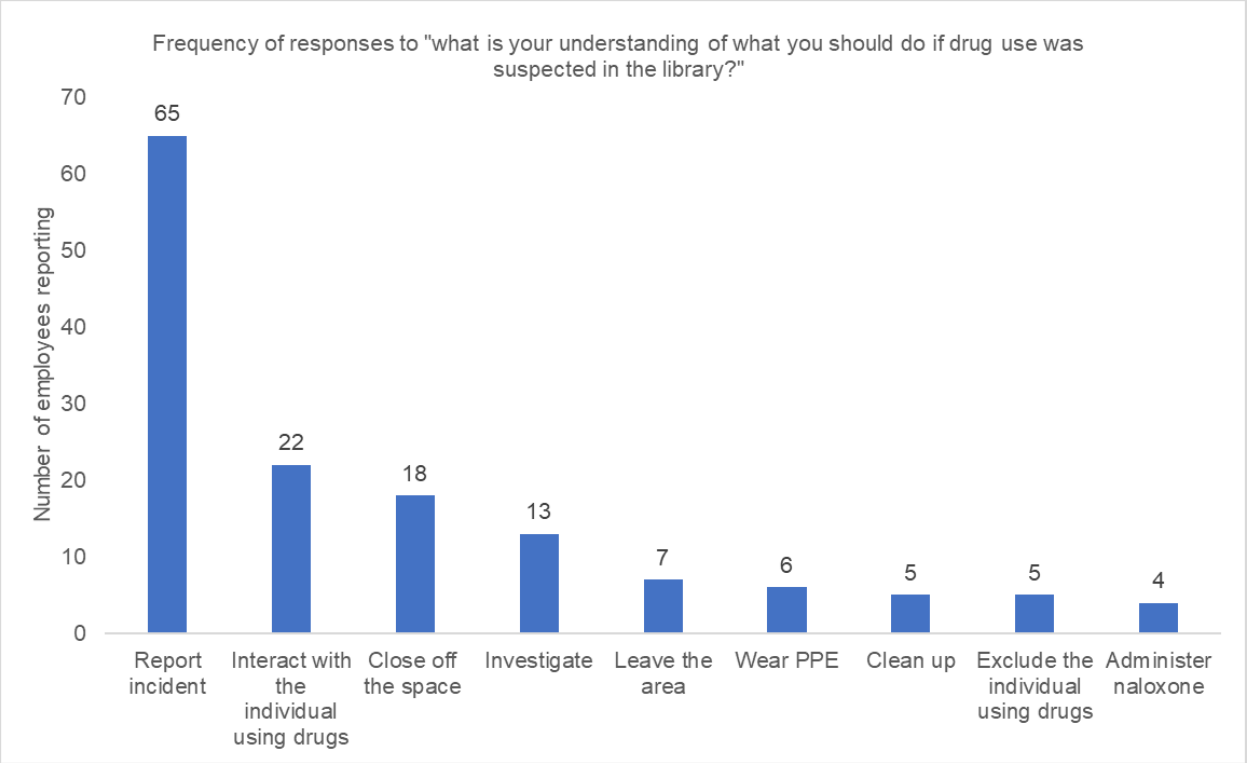
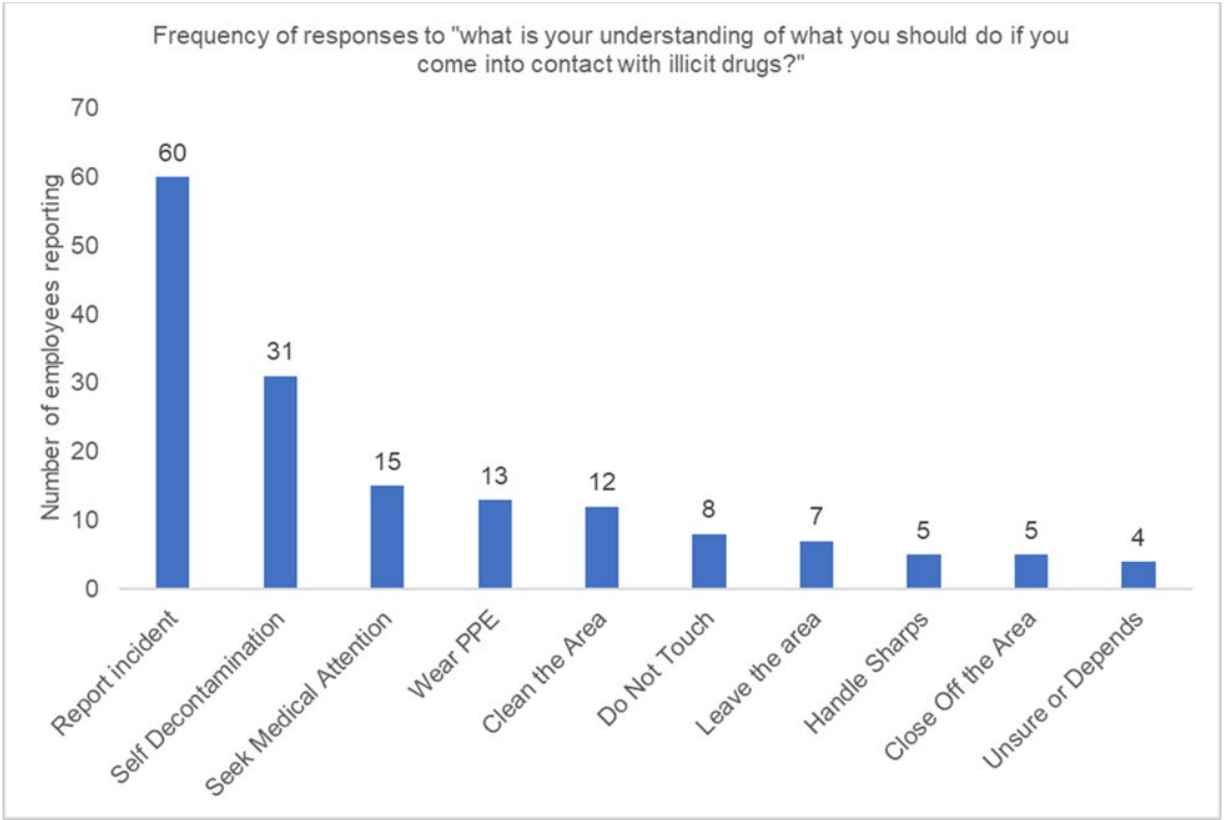


Figure B3. Frequency of responses to "what is your understanding of what you should do if drug use was suspected in the library?"

Overall, 72 (76%) employees reported that they had received training on this topic and 45 (47%) felt that they had received adequate training.

If One Comes into Contact with Illicit Drugs

All 95 interviewed employees described their understanding of what to do if they came into contact with illicit drugs. The most common themes among the responses are summarized in Figure B4. The most common theme was reporting the incident to someone (e.g., PIC, manager, security, or filling out paperwork) (n = 60; 63%), followed by self-decontamination (e.g., washing or cleaning oneself) (n = 31; 33%) and seeking medical attention (n = 15; 16%).



PPE = personal protective equipment.

Figure B4. Frequency of responses to "what is your understanding of what you should do if you come into contact with illicit drugs?"

Overall, 48 (51%) employees reported that they had received training on this topic and 25 (26%) employees felt that they had received adequate training.

PPE Access

According to the county's guidance for responding to illicit drug use, staff have access to nitrile gloves and N95 respirators for use on a voluntary basis. We were shown these items at the locations visited. When asked about access to gloves at work, 94 (99%) interviewed employees reported that they had access and 1 (1%) responded with "don't know." Regarding access to N95 respirators at work, 69 of 95 (73%) employees responded with "yes," 11 (12%) responded with "no," and 15 (16%) responded with "don't know."

Concerns

Of 95 interviewed employees, 52 (55%) reported that they had concerns about exposure to illicit drugs in the workplace. Figure B5 shows the frequency of concerns reported by three or more employees. The most commonly reported concerns included exposure to illicit drugs at work in general (n = 17; 33%), illicit drug use in the restrooms (n = 16; 31%), and potential health effects from exposure to illicit drugs at work (n = 11; 21%).

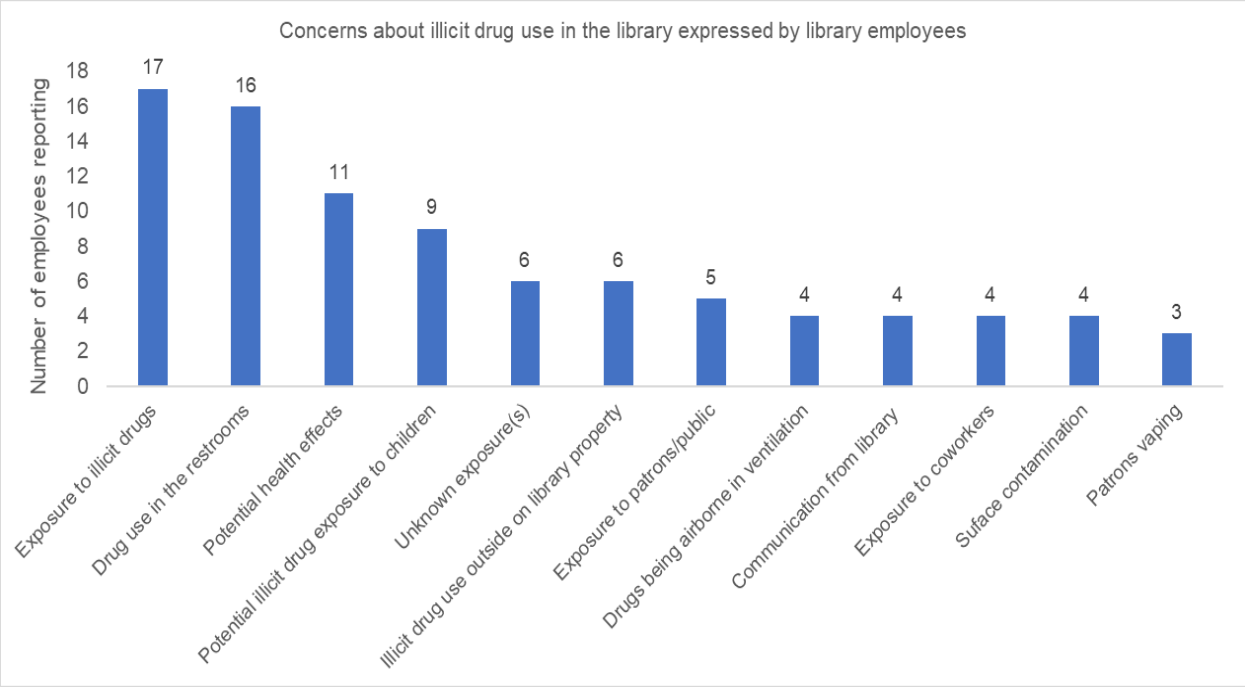
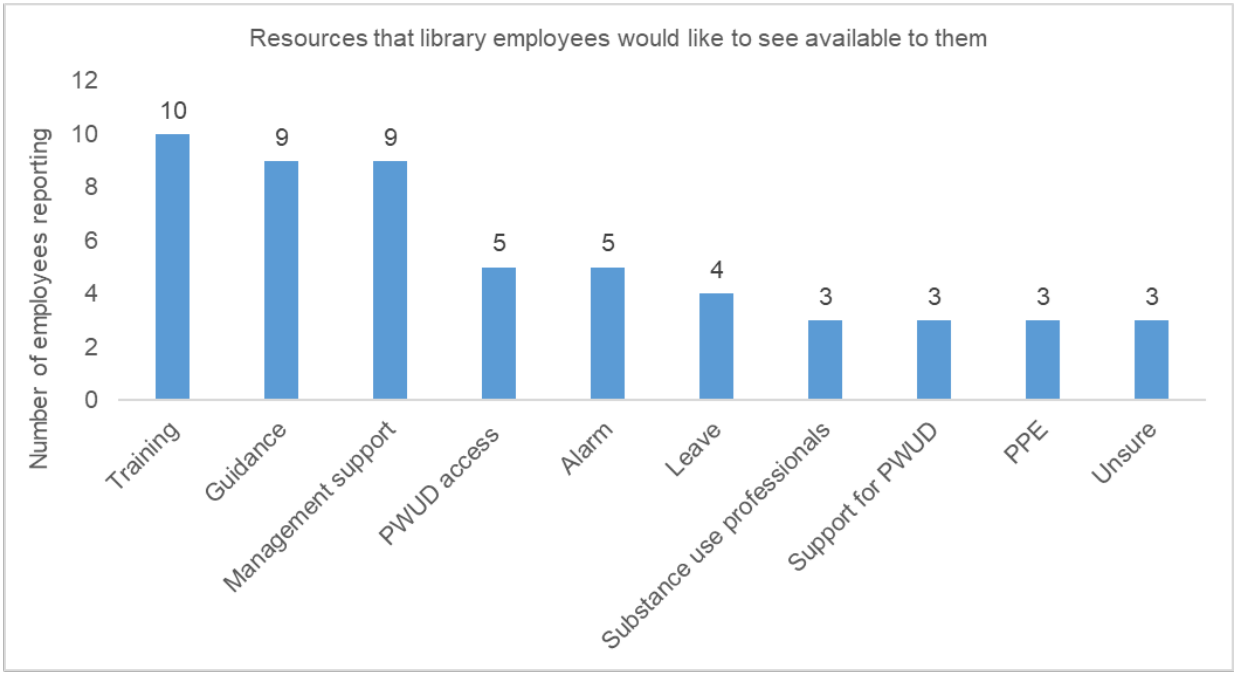


Figure B5. Concerns about illicit drug use in the library expressed by interviewed library employees

Desired Support or Resources

Approximately half of interviewed employees (n = 47; 49%) reported that the library provided adequate support and resources to address concerns related to staff being exposed to illicit drugs. Nine (9%) employees replied with "don't know." Of the 39 (41%) employees who responded with "no," 37 (95%) described what kind of support or resources they would like the library to provide (Figure B6). The most common theme among the 37 responses was training (n = 10; 27%), followed by guidance (n = 9; 24%) and management support (n = 9; 24%). Among the management support category responses, employees mentioned wishing for a different attitude or more responsiveness to requests for assistance from management on topics related to illicit drugs.



PPE = personal protective equipment; PWUD = persons who use drugs

Figure B6. Resources that interviewed library employees would like to see available to them

Discussion

Smoking Illicit Drugs

Recently, smoking has become a more popular way to use drugs. For example, larger percentages of participants of the WA State Syringe Service Program Health Survey reported smoking than injecting for both fentanyl (72% and 47%) and methamphetamine (80% and 70%) in 2021 [Kingston et al. 2022]. By 2023, over half of survey participants (52%) reported only smoking [Kingston et al. 2024]. In a California study that followed persons who used drugs over time, smoking fentanyl and methamphetamine more often than injecting each drug became more common from 2020 to 2023; one-third of study participants who injected drugs at the beginning of the study transitioned to only smoking them [Eger at al. 2024]. These trends in the route of drug use were also reflected in overdose death data from 28 jurisdictions across the United States. From January–June 2020 to July–December 2022, the percentage of overdose deaths with evidence of smoking increased approximately 74%, becoming the leading route of drug use (23%) in overdose deaths in the United States and in each U.S. region [Tanz et al. 2024].

As a result, there might be more opportunities for exposure to smoke from illicit drugs in the occupational setting or in public places. In 2023, researchers from the University of Washington conducted an exposure assessment of fentanyl and methamphetamine in public transit buses and trains from five transit agencies in Washington and Oregon [Baker et al. 2023]. Concerns about potential exposure to transit operators and passengers arising from drug use observed on transit vehicles led to this assessment. One finding was that fentanyl was detected in 20 of the 78 (25%) area air samples collected and 1 of 78 (1%) area air samples found fentanyl at a concentration above 0.1 μg/m^3, which was the threshold limit value (TLV) for fentanyl adapted by the American Conference of Governmental

Industrial Hygienists (ACGIH) in 2024 as an 8-hour time weighted average [ACGIH 2025]. TLVs are developed by committee members of ACGIH, a professional organization, from a review of the published, peer-reviewed literature. TLVs are considered voluntary exposure guidelines for use by industrial hygienists and others trained in this discipline "to assist in the control of health hazards" [ACGIH 2025]. Of note, the University of Washington study did not characterize short- or long-term health outcomes and did not assess biomarkers of exposure (for example, in blood or urine) to understand how much found in the environment had entered people's bodies. In addition, ventilation in transit vehicles might differ from ventilation in buildings such as libraries.

Ventilation in Library Restrooms

The county provided guidance to employees regarding restroom incident response procedures. Part of this guidance was to close restrooms for 30 minutes after suspected illicit drug use to allow restroom ventilation to complete at least one air exchange before reopening the restroom. The term air exchange means to exhaust all of the air in a room completely, replacing it with air either supplied directly from the building HVAC system or from surrounding areas outside the restroom. The number of times this occurs in a period of time is referred to as an exchange rate, generally expressed in air changes per hour.

For example, if a small, single occupant restroom were 10 feet wide, 8 feet tall and long, it would have a maximum of 640 cubic feet of space. The actual volume will be affected by the layout of the restroom, fixtures, sinks, and other restroom components. ASHRAE recommends (and some building codes could require) that a restroom with one fixture (e.g., toilet), be equipped with at least one exhaust fan flowing a minimum of 50 CFM. This would provide an exchange rate of ≥4.6 complete restroom air exchanges per hour (or ≥2.3 in 30 minutes). Based on the information we were provided, (and assuming a minimum flow rate of 50 CFM per exhaust fan) the exchange rate for the restrooms in the three libraries we evaluated ranged from 2–4 times every 30 minutes. This assumes fans operate in continuous mode [ANSI/ASHRAE 2022]. Energy saving devices such as motion sensors or timers will impact restroom exchange rates.

OSHA addresses workplace exposure to hazardous drugs in specific OSHA standards for general industry such as the Occupational Exposure to Hazardous Chemicals in Laboratories (29 CFR 1910.1450) and the (globally harmonized) Hazard Communication standard (29 CFR 1910.1200). In addition, the Environmental Protection Agency (EPA) publishes Voluntary Guidelines for Methamphetamine and Fentanyl Laboratory Cleanup. These guidelines address workplaces where employees have direct contact with hazardous substances as part of their daily work. Currently, we are unaware of research into, nor publication of guidance from regulatory agencies regarding unexpected exposures in other workplaces. As such, there are no published guidelines or recommendations on air exchange rates in public restrooms in the event of an illicit drug incident. In such situations, meeting building code requirements would be the default recommended guidance.

Employees told us about a fire that occurred in a stairwell outside of Library A and that odor from the fire was noticeable in the basement. They were concerned that smoke from the fire had been drawn into their workplace through the HVAC system. All of the outdoor air intakes for building HVAC systems are on the roof of the building. However, air vents seen in the building stairwell provide makeup air for the boiler room in the basement. The boilers provide hot water for the building but are

not connected to the HVAC system. During our visit, the boiler room was positively pressurized when compared to surrounding areas in the basement. Odor from the fire may have entered the basement this way.

During our inspection we discovered that none of the restroom fans in Library C were operating. Neither we, nor the accompanying maintenance staff, could find an obvious reason. Incidentally, we observed a syringe needle stuck in the ceiling tile of one public restroom.

Exposure Incidents

According to interview responses, approximately two-thirds of exposure incidents occurred near restrooms and 85% involved smoke. The most commonly suspected illicit drug was fentanyl, mentioned for 66% of incidents. These findings are consistent with the reported concerns that led to this evaluation and smoking becoming a more common route of drug use as reported in the scientific literature.

Not all exposure incidents reported by library employees were associated with symptoms. Of the 34 employees who reported an incident, 19 (56%) reported experiencing symptoms during the incident or shortly afterwards, corresponding to 22 (54%) of 41 reported incidents. Interviewed library employees did not report symptoms associated with severe opioid toxicity such as miosis (small or "pinpoint" pupils), stopped breathing, or loss of consciousness. Only 1 employee reported seeking medical attention for symptoms. In general, these results were similar to those from previous HHEs involving first responders who experienced symptoms after occupational exposure to illicit drugs, mostly in powder form [Chiu et al. 2019; NIOSH 2021]; a range of non-specific symptoms were reported after incidents with exposure to illicit drugs with no reports suggesting severe, life-threatening toxicity. Whereas headache was the most commonly reported symptom among library employees (14 of 22, or 64% of incidents with symptoms reported), lightheadedness was the most common symptom reported by 11 of 12 (92%) police officers who experienced symptoms after an incident involving suspected exposure to illicit drugs included in a previous HHE [NIOSH 2021]. Throat, nasal or sinus, and eye symptoms were reported by library employees but not police officers in the previous HHE. Four police officers had noted miosis, which is an observable physical finding rather than a symptom. We hypothesize that these slight differences in symptom profiles might be related to irritating effects of smoke.

The smoke generated during illicit drug use is challenging to characterize. Nonpharmaceutical grade or illicit drugs can contain adulterants [Di Trana et al. 2022], making it difficult to know the composition present during any smoke exposure event. However, while the composition of illicit drug smoke varies, studies suggest that the exposure of bystanders can be substantially less than that of a person using the drug. While the popularity of smoking as a route of drug use shows that it delivers the drug to the user, the risk of overdose in others due to exposure to that smoke is low [Washington State Department of Health 2024]. A person smoking fentanyl likely tries to inhale most of the smoke generated from heating it because their goal is to experience its effects; in other words, they usually try to minimize the escape of sidestream smoke. In addition, most of the fentanyl inhaled by the person using it is not exhaled because fentanyl is readily taken up in the lungs when inhaled, similar to a fentanyl dose delivered intravenously [MacLeod et al. 2012; Wang et al. 2009]. In a study where patients undergoing

cardiac surgery were given an intravenous dose of fentanyl, the amount detected in their exhaled breath was several orders of magnitude lower than the dose given [Wang et al. 2009]. Regarding methamphetamine smoke, researchers in Japan conducted a simulation study where a healthy volunteer was positioned 80 centimeters (cm) (approximately 32 inches) away from smoke generated by heating methoxyphenamine, a structurally similar model of methamphetamine, to mimic a person in the passenger seat of a car inhaling the smoke from someone smoking in the driver's seat (condition 1). Later, the same volunteer was asked to actively inhale the methoxyphenamine smoke close to where it was generated (condition 2). The maximum concentration of methoxyphenamine in the air near the breathing zone at condition 1 was approximately 1/2,900 (approximately 0.03%) of the concentration during condition 2. At the site of heating, the air concentration of methoxyphenamine increased rapidly, peaked 60 seconds after heating began, and decreased rapidly under condition 2. The maximum urine concentrations of methoxyphenamine and its metabolite *O*-desmethylmethoxyphenamine associated with condition 1 were each less than 2% of those associated with condition 2 [Morinaka et al. 2023].

The long-term effects of exposure to smoke from illicit drugs in the environment are not known at this time [Baker et al. 2023; Washington State Department of Health 2024]. In addition, it is unclear whether the psychoactive component or other components of the smoke might be causing symptoms. For example, in addition to the possible formation of degradation products detected when fentanyl is heated for delivery in controlled laboratory settings [Vazda et al. 2021], the substances might not be pure fentanyl in real-world settings. It is also possible that symptoms in some employees might be associated with the odor of illicit drug smoke, which has been described as unpleasant. Odors may produce health symptoms by three mechanisms. First, symptoms can be induced by exposure to odorants at levels that also cause irritation. Therefore, irritation, rather than the odorant, is the cause of the symptoms. Second, health symptoms from odorants at nonirritant concentrations, such as hydrogen sulfide, can be due to innate or learned aversions. Third, symptoms may be due to a co-pollutant that is part of an odorant mixture [Schiffman and Williams 2005]. Since the identities of odorants and active illicit drug compounds in any specific incident of illicit drug smoke are unknown, any of these mechanisms might be associated with symptoms.

Psychosocial Factors at Work

NIOSH [2014] defines job stress as the harmful physical and emotional responses that occur when job demands do not match the capabilities, resources, or needs of employees. In this case, 80% of library employees reported that illicit drug use in the library increases their level of job stress. Sixty-five percent of employees reported the library's guidance to address illicit drug use in the library is inadequate and 34% reported not knowing how to protect themselves from potential exposure to illicit drugs. Our findings are similar to those of a qualitative analysis of public library workers [Lowenstein et al. 2021] where nearly all participants reported substance use at work as a major concern. Many of the participants in this qualitative study indicated that they were willing to provide support or emergency assistance to patrons, but lacked the preparation, resources, or institutional support to do so.

People who are PICs seem to have fewer concerns about illicit drug exposure at work than those who are not PICs. This may be due to experience, as PICs were more likely to have longer tenure. It may be due to training differences for PICs versus employees who are not PICs, as PICs receive training on a

broad variety of topics that others do not receive, as evidenced by the PIC training and participant guide. These training topics are similar to those we recommend for all employees.

Training, guidance, and management support were the most frequently reported resources desired by employees. This is similar to findings from a cross-sectional survey of library workers in five states, where 90% of respondents reported wanting additional training on substance use topics [Feuerstein-Simon et al. 2022]. We included descriptions of trainings and resources that may be helpful among our recommendations, located in the beginning of this report. Emergency response protocol training could provide employees with life-saving skills and affect risk perception about illicit drugs. Resilience and self-care training could impact job stress and anxiety in a meaningful way [Robertson et al. 2015]. Workplace violence training can help prepare employees for potentially dangerous situations involving persons who use drugs (PWUD) [NIOSH 2013]. Stigma training could impact perceptions of PWUD and how one approaches situations involving illicit drug use [Murphy and Russell 2023]. The evolving responsibility of library employees interacting with PWUD [Caron 2024] highlights the need for additional training and support for them to effectively manage complex situations while maintaining their primary mission of providing access to information and services [Allen et al. 2020; Feuerstein-Simon et al. 2022; Lowenstein et al. 2021].

Limitations

Our evaluation had some limitations. First, our evaluation was cross-sectional, meaning it can only assess conditions at the locations we visited during the timeframe of the evaluation. It was not possible to include all library locations in the evaluations. However, locations were chosen based on factors such as the number of incidents involving illicit drugs reported, which locations were open, and restroom configurations. Second, interview findings were based on self-reported responses. Employees were asked about events up to 12 months prior to the interview. Thus, there is potential for decreased recall. The unpredictable nature of potential exposure scenarios did not allow for environmental or worker exposure sampling. Even if such sampling was done, it would be unclear whether those results would be representative and thus useful for informing recommendations for improving workplace safety and health.

Conclusions

Approximately one-third of interviewed library employees reported being exposed to illicit drugs in the workplace in the past 12 months; most incidents involved exposure through the air, in or near a library restroom, or with fentanyl as the suspected substance. At the library locations we visited, the HVAC systems seemed capable of achieving 2–4 air changes in restrooms in 30 minutes, in line with the county's guidance to close library restrooms and allow for ventilation after smoke or odors from suspected illicit drug use are detected. However, only 2 of 3 locations had working restroom exhaust fans. Slightly half of employees who reported being exposed to illicit drugs reported non-specific symptoms that were not associated with severe opioid toxicity. Many employees described illicit drug use in the library as a major problem that increased their level of job stress; employees desired more training, guidance, and management support to address illicit drug use in the library.

Attribution Statement

N95 is a certification mark of the U.S. Department of Health and Human Services (HHS) registered in the United States and several international jurisdictions.

Section C: Tables

Table C1. Characteristics of interviewed library employees (n = 95)

Characteristic	No. (%)
Job title	
Librarian	3 (3%)
Library Access Services Assistant	36 (38%)
Library Administrator	9 (10%)
Library Assistant*	35 (37%)
Youth Librarian	2 (2%)
Safety*	5 (5%)
Supervisor*	2 (2%)
Other	3 (3%)
Person-in-charge within the past 12 months	44 (46%)
Worked at more than 1 branch in the past 12 months	27 (28%)
Race or ethnicity† (n = 92)	
American Indian or Alaska Native	5 (5%)
Asian	7 (8%)
White	69 (75%)
Black or African American	11 (12%)
Hispanic or Latino	12 (13%)
Other	2 (1%)
More than 1 race or ethnicity category	10 (11%)

* Job titles containing this term were included in this category.

† Responses do not add to 100% because participants were asked to select all that applied.

Table C2. Frequency of responding to suspected illicit drug use in the past 12 months (n = 59)*

Frequency	No. (%)†
Daily	5 (8%)
More often than weekly	4 (7%)
Weekly	14 (24%)
More often than monthly	2 (3%)
Monthly	12 (20%)
Less often than monthly	17 (29%)
Once in the past 12 months	4 (7%)
Variable	1 (2%)

* Responses to the question “How often?” from the 59 employees who responded “yes” to the question “In the last 12 months, have you responded to suspected illicit drug use while working in the library?”

† Responses do not add to 100% due to rounding.

Table C3. Employee perceptions of which illicit drugs to which they were exposed (n = 41)*

Drug	No. (%)†
Fentanyl	27 (66%)
Unsure or unspecified	4 (10%)
Fentanyl or methamphetamine	3 (7%)
Cannabis	2 (5%)
Fentanyl and methamphetamine	2 (5%)
Methamphetamine	2 (5%)
Opioid	1 (2%)

* The 34 employees who reported one or more of four possible exposure scenarios in the past 12 months were asked “what substance do you think you were exposed to?” for each incident (n = 41).

† Responses do not add to 100% due to rounding.

Table C4. Form of illicit drug to which employees reported exposure (n = 41)*

Form	No. (%)†
Smoke	35 (85%)
Powder	2 (5%)
Liquid	2 (5%)
Pill or tablet	1 (2%)
Paraphernalia	1 (2%)
Other	2 (5%)

* The 34 employees who reported one or more of four possible exposure scenarios in the past 12 months were asked “what was the form of the illicit drug?” for each incident (n = 41).

† Responses do not add to 100% because participants were asked to select all that applied.

Table C5. Personal protective equipment (PPE) use during incidents (n = 41)*

PPE use	All of the time no. (%)	Some of the time no. (%)	Not used no. (%)
Glove	5 (12%)	1 (2%)	35 (85%)
Eye protection	2 (5%)	0	39 (95%)
N95 respirator	2 (5%)	5 (12%)	34 (83%)
KN95 respirator	3 (7%)	0	38 (93%)
Surgical mask	1 (2%)	1 (2%)	39 (95%)

* The 34 employees who reported one or more of four possible exposure scenarios in the past 12 months were asked “During the event, were you wearing [PPE type] all of the time, some of the time, or not wearing?”

Responses do not add to 100% due to rounding.

Section D: References

Illicit Drugs

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