U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
OFFICE OF INSPECTOR GENERAL

HHS OIG Data Brief • May 2017 • (OEI-04-15-00430)

CDC Generally Met Its Inspection Goals for the Federal Select Agent Program; However, Opportunities Exist To Strengthen Oversight

Results at a Glance

- ***CDC met its goal of performing a Registration Renewal inspection at least once at nearly all entities that handle select agents and toxins from 2013 through 2015.***
- ***During all inspections, CDC identified at least one "observation"—i.e., an instance of potential regulatory noncompliance—per entity. The majority of these observations were associated with two areas: Biosafety and Security.***
- ***In 2015, CDC exceeded its annual goal for 30 percent of its inspections to be unannounced. In 2013 and 2014, CDC did not meet this goal, focusing instead on announced inspections for training purposes.***
- ***Most entity-reported Theft, Loss, or Release (TLR) events were Releases, one of which resulted in occupational illness. However, nearly 75 percent of entities did not report a TLR event to CDC from 2013 through 2015. CDC officials expressed concern that entities may be underreporting these events.***
- ***CDC initiated compliance actions for 14 percent of entities; most were Referrals to enforcement agencies for further review.***
- ***Draft CDC risk assessment policies evaluate some, but not all, variables that can inform the risk that an entity poses to public health and safety.***

In this data brief, we examine how the Division of Select Agents and Toxins (DSAT)—part of the Centers for Disease Control and Prevention (CDC)—oversees the Federal Select Agent Program (FSAP). We did this by reviewing DSAT's inspections and observations; Theft, Loss, or Release (TLR) events reported by entities that handle select agents and toxins; and compliance actions from 2013 through 2015.

Biosafety and biosecurity incidents at laboratories involving select agents and toxins have raised concerns regarding DSAT oversight of entities that handle such substances, as well as the potential impact to public health and safety. For instance, in May 2015, the Department of Defense acknowledged that one of its laboratories inadvertently shipped live anthrax-causing bacteria. This event helped spur a July 2015 congressional hearing on oversight concerns related to the FSAP.

This data brief will help strengthen the FSAP by providing new analyses that DSAT can use to enhance its oversight. It is intended to complement the 2015 Annual Report of the Federal Select Agent Program, which was issued in June 2016, as well as the forthcoming 2016 annual report, which is expected to be issued in June 2017.[1] This data brief is the first of two reports by the Department of Health and Human Services (HHS), Office of Inspector General (OIG), on DSAT's oversight of entities registered with the

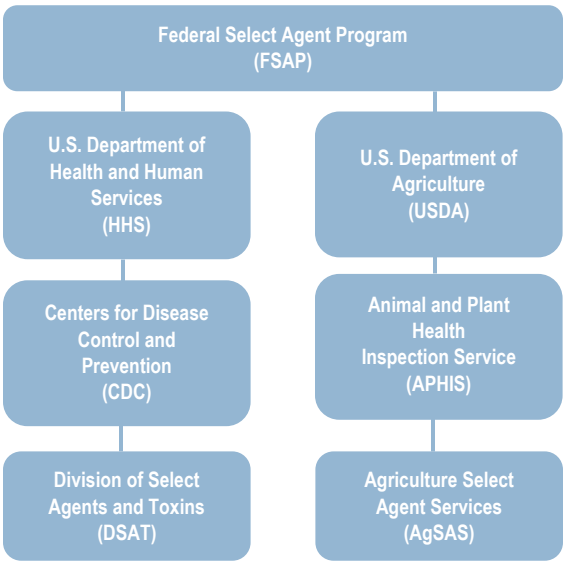
FSAP. The second report will provide DSAT with information on the oversight of FSAP-registered laboratories by responsible officials—the individuals at each entity who are accountable for compliance with regulations for select agents and toxins.[2]

BACKGROUND

The FSAP oversees the possession, use, and transfer of select agents and toxins and is jointly managed by HHS and the U.S. Department of Agriculture (USDA). (See Exhibit 1 for the departments, agencies, and divisions responsible for providing FSAP oversight.) The FSAP is composed of DSAT—part of CDC—and the Agriculture Select Agent Services (AgSAS), part of USDA's Animal and Plant Health Inspection Service (APHIS).[3]

DSAT's role within the FSAP is to regulate select agents and toxins that pose a severe risk to public health and safety. AgSAS's role within the FSAP is to regulate select agents and toxins that pose a severe risk to animal and plant health or to animal and plant products.

Exhibit 1: The FSAP Oversight Structure



Source: HHS OIG analysis of the Federal Select Agents Program, *About Us*. Accessed at https://www.selectagents.gov/about.html on February 15, 2017.

In addition to its FSAP management and oversight responsibilities, CDC has laboratories that are registered with the FSAP. To avoid concerns of CDC self-regulation, these laboratories are inspected by AgSAS. Hereinafter, references to "CDC" pertain to DSAT's oversight role within the FSAP, unless otherwise specified. In addition, the focus of this review is on the HHS responsibilities of the FSAP, as they are the only portion of the FSAP under HHS OIG's authority.

DSAT regulates biological agents and toxins that pose a severe risk to public health and safety so that research to improve the detection, prevention, diagnoses, and treatment options for diseases is conducted as safely and securely as possible. In fiscal year 2016, DSAT received approximately $21.5 million to provide FSAP oversight.[4]

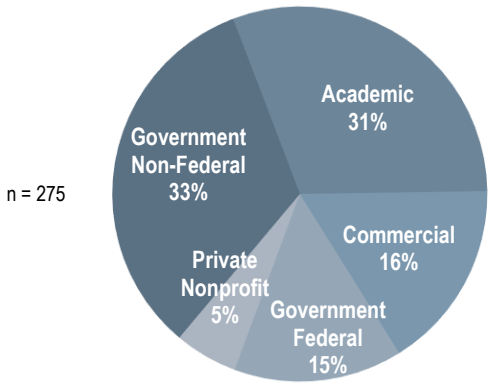
An entity that possesses, uses, or transfers select agents and toxins must register with the FSAP by submitting an application to DSAT.[5] On this application, the entity must list all of its laboratories that handle select agents and toxins. DSAT reviews these applications, inspects the associated laboratories, and grants approval when all of the FSAP requirements for working safely and securely with select agents and toxins are met.

All registered entities and their laboratories that handle select agents and toxins must comply with FSAP regulations in 42 CFR part 73.[6] When conducting inspections, DSAT staff focus their review on 13 of 22 regulatory sections. (See Appendix A for a list of these 13 sections.) Each of

the 13 sections has multiple subsections that further delineate the requirements within the section. According to DSAT, it also uses the *Biosafety in Microbiological and Biomedical Laboratories* guide and the *NIH [National Institutes of Health] Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules* (*NIH Guidelines*) to identify "observations"—i.e., instances of potential noncompliance with regulations—that fall under biosafety regulations at 42 CFR § 73.12.[7, 8]

DSAT categorizes entities as one of five organization types: Government Non-Federal, Academic, Commercial, Government Federal, and Private Nonprofit.[9] (See Exhibit 2 for the percentages of the 275 entities registered with DSAT by entity type, from 2013 through 2015.)

Exhibit 2: Percentage of Entities Registered With DSAT by Entity Type, 2013–2015



Source: HHS OIG analysis of DSAT data, 2016.

DSAT provides oversight of the FSAP through three primary mechanisms. First, DSAT inspects entities to ensure that they comply with regulations. If DSAT identifies potential noncompliance with regulations during these inspections, it identifies them as observations. Second, DSAT reviews all entity reports of TLR events and assesses each event to determine whether additional action is required. Third, DSAT initiates compliance actions to address serious or repeated potential noncompliance with regulations regarding select agents and toxins, such as the theft of, loss of, and/or exposure to select agents and/or toxins.

DSAT Inspections and Observations

Announced and unannounced onsite inspections are one of the tools that DSAT uses to ensure that entities are complying with FSAP regulations. According to DSAT officials, DSAT's goal is for unannounced inspections to constitute approximately 30 percent of all inspections that DSAT conducts annually. However, DSAT does not have a formal policy for determining whether an inspection should be announced or unannounced.

Additionally, DSAT officials have different protocols for different types of inspections. For instance, the inspection checklist varies according to the type of inspection, as does the list of entity staff who are required to be present. DSAT officials also set a goal for DSAT to perform a Registration Renewal inspection at each entity every 3 years. Exhibit 3 describes the eight types of DSAT inspections and notes whether DSAT performs announced or unannounced inspections by each type.

DSAT uses teams to conduct inspections. Each team member has certain responsibilities—for example, reviewing entity records to determine whether an entity is compliant with all sections of regulations regarding select agents and toxins, or drafting a report of inspection findings. All inspectors must complete required training before they can inspect entities. This requirement is

intended to ensure that inspectors correctly identify observations and understand entity processes for working with select agents and toxins.

Exhibit 3: Types of DSAT Inspections

Inspection Type	Announced	Unannounced	Description
New Entity	X		A routine review of laboratory spaces and documents for an entity that is submitting a new application to work with select agents and toxins.
Registration Renewal	X	X	A routine review of an entity's entire program, including all registered laboratories and documents. DSAT's goal is to conduct a Registration Renewal inspection at each entity every 3 years.
New Space	X		A routine review of new laboratory space and documents after the new laboratory space is added to an entity's existing registration.
Maximum Containment	X		A routine annual review of an entity's entire program, including laboratory spaces and documents, for laboratories that work with select agents and toxins requiring the highest levels of containment. A Maximum Containment inspection and a Registration Renewal inspection may both be conducted in the same year.
Verification	X	X	A nonroutine inspection used to verify that an entity has resolved observations identified in a previous Registration Renewal inspection.
Investigation	X	X	A nonroutine inspection initiated on the basis of a specific complaint of severe regulatory noncompliance.
Compliance	X	X	A nonroutine inspection initiated on the basis of a specific compliance issue (e.g., TLR events or a complaint).
Reinspection	X	X	A nonroutine inspection conducted to verify that an entity's unresolved compliance issue has been successfully addressed.

Source: HHS OIG analysis of the *2015 Annual Report of the Select Agent Program* and DSAT data, 2016.

After completing an inspection, DSAT inspectors brief entity management about any observations identified during the inspection. In addition, DSAT inspectors provide a written report to the entity that contains the observations—categorized according to the 13 regulatory sections that DSAT reviews when conducting inspections—and reasons for the observations.

Theft, Loss, or Release Events

An entity is required to report to DSAT any TLR events—i.e., Theft, Loss, or Release incidents that may pose a risk to public health and safety—that occur there. Exhibit 4 provides definitions for these event types. Examples of events that must be reported include an inventory discrepancy; a tear in a glove or containment suit; and a release of select agents and toxins that results in occupational exposure.

Exhibit 4: Formal Types of TLR Events

Event Type	Description
Theft	Unauthorized removal of a select agent or toxin from an entity
Loss	Failure to account for a select agent or toxin at an entity
Release	Occupational exposure or discharge of a select agent or toxin outside the primary barriers of a biocontainment area

Source: DSAT, *2015 Annual Report of the Select Agent Program, 2016*

In addition to these three formal types of TLR events identified in Exhibit 4, there are some reported TLR events that DSAT categorizes as "Incidents." DSAT uses this term if the reported event does not fit any of the existing TLR definitions but has the *potential* for Theft, Loss, or Release. For example, if an entity identified an air leak from a biocontainment area that did not contain a select agent or toxin, DSAT may categorize it as an Incident (rather than as a Release).

An entity must report TLR events to DSAT immediately once it identifies them.[10] An entity may identify TLR events on its own, or DSAT inspectors may identify TLR events during an inspection. DSAT expressed concern that entities with no reported TLR events for multiple years may be underreporting and pose more of a risk than entities that reported TLR events.

In December 2016, CDC proposed to revise the form that entities use to report TLR events to further clarify what needs to be reported to CDC or APHIS as a Release or Loss. Other proposed revisions to the form include additional fields to assist CDC and APHIS with categorizing the type of release, type of exposure, and the understanding of safety and security risk levels relative to human illness.[11]

DSAT is responsible for reviewing all entity reports of TLR events and categorizing each into one of four occupational risk categories. Occupational risk categories range from "Minimal/No Exposure" to "Occupational Illness" (i.e., illness resulting from exposure to a select agent or toxin). (See Exhibit 5 for DSAT's four TLR occupational risk categories.) Depending on the TLR event (i.e., for urgent or time-sensitive cases), DSAT may conduct followup inspections to ensure staff safety.

Exhibit 5: TLR Occupational Risk Categories

TLR Occupational Risk Categories
Minimal/No Exposure
Potential Exposure
Possible Occupational Illness
Occupational Illness

Source: HHS OIG analysis of DSAT data, 2016.

Compliance Actions

DSAT initiates compliance actions to address serious or repeated observations and/or TLR events. DSAT reviews current and past inspection reports and other documents to determine whether an entity should be subject to one or more compliance actions.[12] (See Exhibit 6 for the five types of compliance actions.)

Exhibit 6: Types of Compliance Actions

Types of Compliance Actions That DSAT Initiates
Application Registration Denials
Corrective Action Plans
Registration Suspensions
Registration Revocations
Referrals *To AgSAS* *To the Federal Bureau of Investigation (FBI)* *To HHS OIG*

Source: DSAT, *2015 Annual Report of the Select Agent Program*.

Application Registration Denials. In instances in which DSAT determines that an entity applying to register with the FSAP does not meet the regulatory criteria to possess, use, or transfer select agents and toxins, DSAT may deny the entity's application.[13] An entity may submit a new application to the FSAP if it wants to register with the program after a previous application has been denied.

Corrective Action Plans. When DSAT identifies systemic and/or severe observations or TLR events at an entity, it may propose that the entity participate in a Corrective Action Plan. The Corrective Action Plan allows an entity to develop steps to address the observations. The Corrective Action Plan also allows DSAT to provide technical assistance and monitor progress in correcting the observations.[14] An entity may choose whether to participate in a Corrective Action Plan. If an entity chooses not to participate in a Corrective Action Plan, DSAT will initiate stronger compliance actions (i.e., registration suspension or revocation) to address the observations at the entity.

Registration Suspensions. In instances in which DSAT determines through an inspection that an entity does not meet the regulatory criteria to possess, use, or transfer select agents and toxins, DSAT may suspend the entity's registration.[15] DSAT determines the conditions of such a suspension—i.e., the issues the entity needs to address—and determines when the entity has fully addressed the conditions leading to the suspension and is thus eligible for its registration to be reinstated.

Registration Revocations. In instances in which DSAT determines that a registered entity does not meet regulatory criteria to possess, use, or transfer select agents and toxins, DSAT may also revoke an entity's registration.[16] According to DSAT, an entity may submit a new application to the FSAP if it wants to reregister with the program after its registration is revoked.

Referrals. DSAT may refer entities to one of three enforcement agencies for further investigation of possible violations of Federal criminal law and/or regulations regarding select agents and toxins.[17] The enforcement agencies are AgSAS, the Federal Bureau of Investigation (FBI), and HHS OIG.

When CDC laboratory staff notify DSAT of possible violations involving CDC laboratories, DSAT refers the possible violations to AgSAS, to avoid the appearance of a conflict of interest. DSAT also refers cases involving other entity types to AgSAS if they appear to violate USDA regulations.

DSAT refers to the FBI possible criminal violations, such as knowingly submitting a false document to DSAT or unlawfully possessing select agents or toxins.

DSAT may also refer to HHS OIG potential violations of regulations at 42 CFR part 73. HHS OIG has the authority to impose civil monetary penalties on entities for violating 42 CFR part 73.

Risk Assessment in the Federal Select Agent Program

All Federal agencies are required to integrate risk management activities into their existing practices. Specifically, the Office of Management and Budget Circular No. A-123 requires agencies to integrate risk management and internal control functions.[18] The Circular also establishes an assessment process based on the Government Accountability Office's *Standards for Internal Control in the Federal Government* that agencies must implement to assess and improve internal controls. A 2015 CDC internal review of the FSAP contained several recommendations to help DSAT better align program risk-assessment activities to improve program performance.[19] These recommendations included prioritizing enforcement actions

according to the risk level of the violation, and analyzing trends and associations between inspection findings and risk.

Methodology

We analyzed FSAP regulations, DSAT documents, and DSAT data to calculate the numbers and types of inspections, observations, TLR events, and compliance actions from 2013 through 2015. We also interviewed DSAT staff and obtained draft DSAT and FSAP policies to learn about current and planned program policies, goals, and oversight activities. See Appendix B for more details on our methodology.

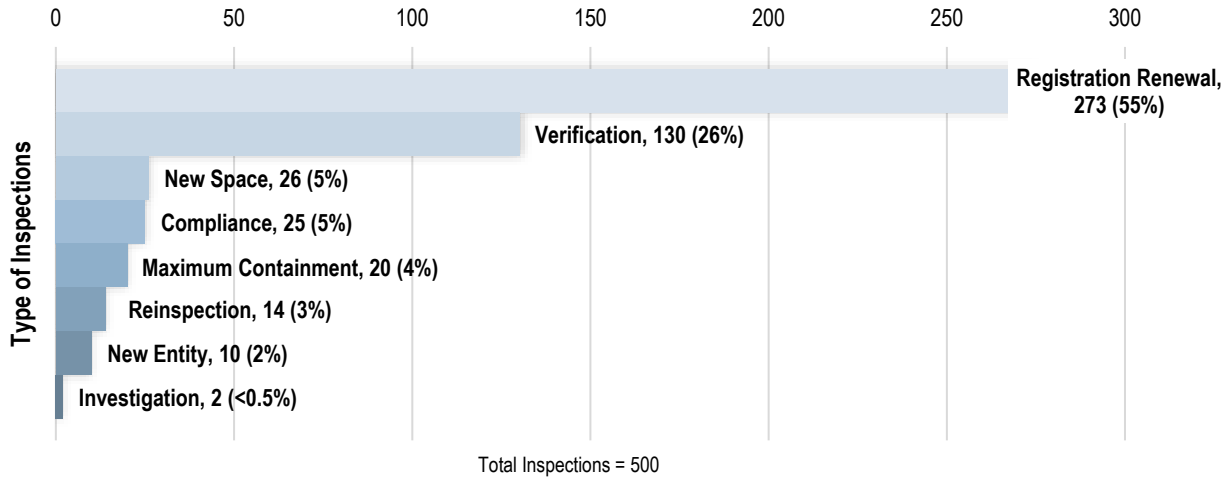
RESULTS

CDC met its goal of performing a Registration Renewal inspection at least once at nearly all entities over a 3-year period

During our review period—2013 through 2015—CDC's DSAT inspected all 275 entities registered with the FSAP, conducting a total of 500 inspections. The number of inspections per entity ranged from 1 to 14, with a median of 2 inspections per entity.[20] Additionally, for the 233 entities that were continuously registered with the FSAP during the 3-year period of our review, DSAT met its goal of performing a Registration Renewal inspection for nearly all of them (227 of 233). The six entities that did not receive a Registration Renewal inspection did receive at least one other type of inspection during this period.[21]

Fifty-five percent of the inspections that DSAT conducted from 2013 through 2015 were Registration Renewal inspections, and 26 percent were Verification inspections. The remaining 19 percent of inspections that DSAT conducted were composed of the six other inspection types. Exhibit 7 below and Exhibit C-1 in Appendix C show the number and percentage of entities inspected by inspection type per year from 2013 through 2015.

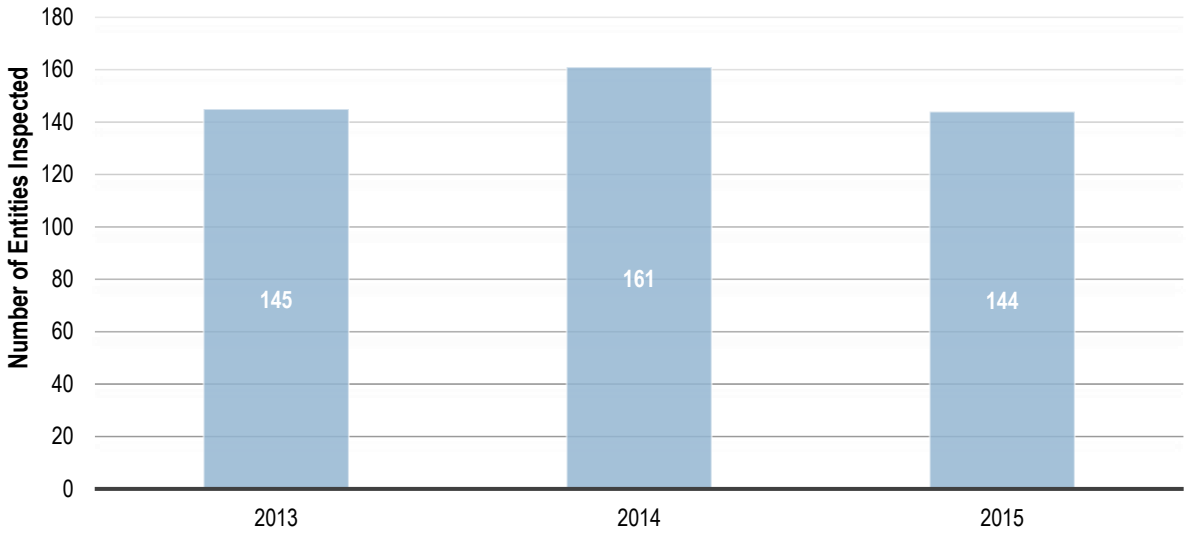
Exhibit 7: Number and Percentage of Inspections by Inspection Type, 2013–2015



Source: HHS OIG analysis of DSAT data, 2016.

The number of entities that DSAT inspected per year varied a small amount across the 3-year period of our review. Specifically, the number of entities inspected increased between 2013 and 2014, from 145 to 161 (an 11-percent increase). In 2015, the number of entities inspected decreased by 11 percent, back to levels similar to those in 2013. CDC reported that this decrease stemmed from a shortage of inspectors available to perform inspections in 2015 relative to the number of inspectors available in 2014. Exhibit 8 shows the number of entities inspected, by year, from 2013 through 2015.

Exhibit 8: Number of Entities Inspected, by Year, 2013–2015



Source: HHS OIG analysis of DSAT data, 2016.
Note: In some cases, DSAT inspected the same entities multiple times.

Sixty-one percent of observations that CDC identified were associated with two areas: Biosafety and Security

Sixty-one percent of the observations that CDC's DSAT identified during inspections at entities were associated with two areas: Biosafety and Security. DSAT identified 8,111 observations during its 500 inspections of entities registered with the FSAP from 2013 through 2015. These 8,111 observations represented potential noncompliance with 11 of the 13 regulatory sections pertaining to select agents and toxins that DSAT reviews during its inspections. Exhibit 9 shows the percentage of observations identified per regulatory section (42 CFR §§ 73.7 through 73.19) from 2013 through 2015. Appendix D shows the number of observations identified by regulatory section and subsection from 2013 through 2015.

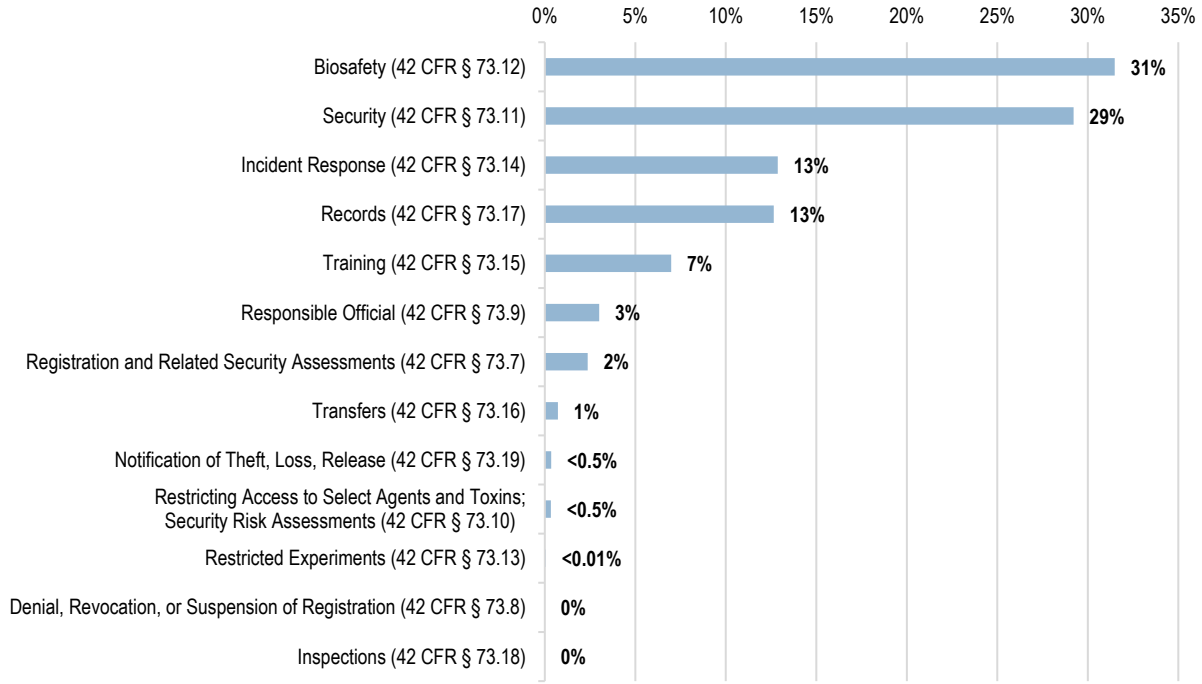
DSAT identified at least one observation at each inspected entity. The number of observations per entity ranged from 2 to 161, with a median of 22 observations per entity.[22] Observations relating to two regulatory sections—Biosafety (42 CFR § 73.12) and Security (42 CFR § 73.11)—accounted for 61 percent (4,923 of 8,111) of all DSAT observations.

The most commonly cited regulatory area pertained to Biosafety—the requirements for entities to have adequate biosafety containment of select agents and toxins (42 CFR § 73.12). Observations in this area accounted for 31 percent (2,554 of 8,111) of all observations. Of the observations associated with Biosafety, the most common observations identified (1,857 of 2,554, or 73 percent) were associated with departures from the *Biosafety in Microbiological and Biomedical Laboratories* guide or the *NIH Guidelines*.

The next most commonly cited regulatory area pertained to Security—the requirements for entities' security (42 CFR § 73.11). Observations in this area accounted for 29 percent (2,369 of

8,111) of all observations. Of the observations associated with Security, the most common observations identified (268 of 2,369, or 11 percent) were associated with deficiencies in the procedures for informing the responsible official and other appropriate agencies of suspected criminal activity.

Exhibit 9: Percentage of Observations Identified by FSAP Regulation Section, 2013–2015



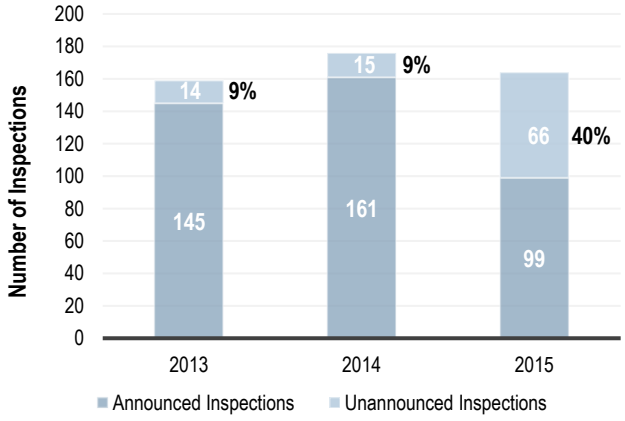
Source: HHS OIG analysis of DSAT data, 2016.
Note: Because of rounding, the sum of Biosafety observations and Security observations in this Exhibit does not equal 61 percent.

CDC met its annual goal for unannounced inspections for 1 of the 3 years we reviewed

CDC's DSAT officials set a goal for unannounced inspections to constitute approximately 30 percent of all the inspections DSAT performed annually. Exhibit 10 shows the number of announced and unannounced inspections performed each year and the percentage of inspections that were unannounced from 2013 through 2015.

In 2015, DSAT exceeded its annual goal, as 40 percent (66 of 165) of all inspections were unannounced. In 2013 and 2014, DSAT did not meet this goal—unannounced inspections accounted for

Exhibit 10: Numbers of Announced and Unannounced Inspections, 2013–2015



Source: HHS OIG analysis of DSAT data, 2016.

9 percent (14 of 159) of all inspections in 2013, and also for 9 percent (15 of 176) of all inspections in 2014. DSAT officials reported that they conducted more announced inspections in 2013 and 2014 to provide assistance and education on regulations updated in October 2012 to a larger number of entity staff.[23] According to DSAT, more entity staff are generally present at announced inspections than at unannounced inspections.

The median number of observations identified by announced and unannounced inspections varied by inspection type. The median number of observations resulting from announced inspections was slightly more (13) than the median number of observations resulting from unannounced inspections (10). However, unannounced inspections yielded a higher median number of observations per inspection than announced inspections for Registration Renewal inspections and Compliance inspections. Exhibit 11 shows the number and median number of observations identified from announced and unannounced inspections for all inspection types from 2013 through 2015. Additionally, see Exhibit C-2 in Appendix C for the average number of observations per inspection by inspection type.

Exhibit 11: Number of Announced and Unannounced Inspections and the Number and Average Number of Observations Identified From These Inspections By Inspection Type, 2013–2015

Inspection Type	Number of Inspections		Number of Observations		Median Number of Observations Per Inspection	
	Announced	Unannounced	Announced	Unannounced	Announced	Unannounced
Registration Renewal	262	11	4,516	297	13	22
Verification	66	64	1,126	771	14	9
Compliance	5	20	22	237	5	9
Reinspection	14	0	169	0	13	n/a
Investigation	2	0	17	0	9	n/a
Maximum Containment	20	n/a	198	n/a	9	n/a
New Space	26	n/a	433	n/a	10	n/a
New Entity	10	n/a	325	n/a	33	n/a
Total	**405**	**95**	**6,806**	**1,305**	**13**	**10**

Source: HHS OIG analysis of DSAT data, 2016.

Most of the TLR events reported by entities were Releases, one of which resulted in occupational illness

From 2013 through 2015, 27 percent of entities (74 of 275) reported a total of 341 TLR events; however, CDC's DSAT determined that only 1 of these TLR events resulted in occupational illness. Of the entities that reported at least 1 TLR event during our 3-year review period, the median number reported was 2 and the range was 1 to 56.[24] Eighty-four percent of the 341 TLR events were reported as Releases. The remaining TLR events were either reported by entities as Losses or were categorized by DSAT as Incidents. During the 3-year period of our review, entities did not report any instances of Theft. Exhibit 12 shows the type, number, and percentage of TLR events from 2013 through 2015. Additionally, Exhibit C-2 in Appendix C shows the type, number, and percentage of TLR events by year, 2013 through 2015.

Exhibit 12: Type, Number, and Percentage of TLR Events and Incidents, 2013 through 2015

Type of TLR Events	Number of TLR Events	Percentage of Total TLR Events
Release	287	84%*
Release Outside Primary Containment	*88*	*26%*
Spills	*69*	*20%*
Personal Protective Equipment Failure	*53*	*16%*
Other Releases	*77*	*23%*
Loss	37	11%
Inventory Discrepancy	*24*	*7%*
No Documentation of Missing Select Agents and/or Toxins	*12*	*4%*
Loss of Vials During Transport	*1*	*<0.01%*
Incident	17	5%
Theft	0	0%
TOTAL	**341**	**100%**

Source: HHS OIG analysis of DSAT data, 2016.
*Note: The sum of the percentages of the Release types exceeds the total percentage of Releases because of rounding.

Additionally, 73 percent of entities (201 of 275) did not report any TLR events during the 3-year period of our review. DSAT expressed concern that entities with no reported TLR events for multiple years may be underreporting and pose more of a risk than entities that reported TLR events.

Releases

From 2013 through 2015, entities reported 287 Releases to DSAT. The majority of these reported releases involved one of three scenarios.

The most common scenario (88 Releases) involved the release of an agent outside a primary containment area. For example, one entity reported that while conducting inventory of select agents and/or toxins, staff identified a broken lid on a frozen vial that contained a select agent.

The second-most common scenario (69 Releases) involved spills. For example, one entity reported that approximately 200 ml of a select agent had leaked from a defective part of a chemical mixing barrel, which potentially exposed staff to harmful neurotoxins.

The third most common scenario (53 Releases) involved the failure of personal protective equipment, such as gloves or masks. For example, one entity reported that a staff member identified a tear in a glove after conducting experiments with the Ebola virus.

The remaining Releases (77) involved a variety of other instances in which select agents and/or toxins were inadvertently released outside primary barriers in biocontainment areas but within protected lab spaces.

Of the 287 Releases, DSAT determined that 1 event resulted in an occupational illness. This Release occurred during transport when plates containing a select agent spilled and exposed a worker to the agent. According to DSAT, the worker tested positive for antibodies indicating an infection, received treatment, and was placed on routine monitoring. Of the remaining 286 Releases, DSAT categorized 2 as a Possible Occupational Illness, 283 as a Potential Exposure, and the remaining event as Minimal/No Exposure.

Losses

From 2013 through 2015, entities reported 37 Losses to DSAT. The majority of Losses (24) were due to inventory discrepancies. Examples of inventory discrepancies included entities' not being able to (1) account for vials of select agents and/or toxins when comparing physical vials to those listed in storage databases or (2) locate vials to use for an experiment. The remaining 13 Losses resulted from not having documentation of missing or discarded select agents and/or toxins or were for vials that were lost during transport. The lost vials were later fully recovered, and the container had not been breached.

DSAT categorized all but 1 of the 37 losses as resulting in Minimal/No Exposure. DSAT categorized the remaining Loss as a Potential Exposure. In this instance, an insect infected with a select agent could not be located. However, DSAT investigated the event and determined that no exposure occurred and that the reported loss likely resulted from an inaccurate count by the entity rather than a "post-exposure escape" of the insect.

Incidents

DSAT categorized 17 TLR events reported by entities from 2013 through 2015 as Incidents. Examples of Incidents included a laboratory worker at an entity who suffered a small abrasion to the shin while swapping out storage racks in a select agent laboratory. In another example, an entity could not locate a select agent vial in its inventory and reported this to DSAT; however, the entity located the vial shortly after reporting the event, so DSAT categorized it as an Incident rather than a Loss.

DSAT categorized 12 of the 17 Incidents as resulting in Minimal/No Exposure and categorized the remaining 5 Incidents as Potential Exposures. For example, a small dried spot, possibly from a select-agent spill, was noted under a culture tank and was therefore categorized as a potential exposure.

CDC initiated 70 compliance actions for 40 entities from 2013 through 2015; most were Referrals to enforcement agencies for further review

CDC's DSAT can initiate one or more compliance actions to address serious or repeated observations and/or TLR events. DSAT initiated 70 compliance actions for 40 entities from 2013 through 2015. For these entities, the number of compliance actions during our review period ranged from 1 to 10. The compliance actions that DSAT initiated were Referrals, Corrective Action Plans, and Registration Suspensions. DSAT did not initiate any other type of compliance actions (i.e., Application Registration Denials or Registration Revocations). Exhibit 13 shows the type, number, and percentage of compliance actions initiated from 2013

through 2015. Additionally, Exhibit C-3 in Appendix C shows the type, number, and percentage of compliance actions per year by type of compliance action, 2013 through 2015.

Fifty of the 70 compliance actions (71 percent) from 2013 through 2015 were Referrals to enforcement agencies (i.e., AgSAS, FBI, and HHS OIG). Each of DSAT's Referrals to AgSAS and the FBI were based on either (1) TLR events at entities that reported being unable to locate one or more select-agent vials listed in their inventory or (2) incidents related to the use or storage of select agents and/or toxins. The 25 Referrals to AgSAS involved 9 entities, including 1 CDC laboratory. All of the Referrals to AgSAS and the FBI have been closed and did not result in additional action (e.g., criminal charges or other compliance action). Six Referrals were sent to HHS OIG and involved five entities. As of May 2017, HHS OIG had closed five of these six Referrals.

Exhibit 13: Type, Number, and Percentage of Compliance Actions Initiated From 2013 through 2015

Type of Compliance Action	Number of Compliance Actions	Number of Entities*	Percentage of Compliance Actions
Referral	50	27	71%**
To AgSAS	*25*	*9*	*36%*
To FBI	*19*	*15*	*27%*
To HHS OIG	*6*	*5*	*9%*
Corrective Action Plan	16	16	23%
Registration Suspension	4	4	6%
Application Registration Denial	0	0	0%
Registration Revocation	0	0	0%
Total	**70**	**40**	**100%**

Source: HHS OIG analysis of DSAT data, 2016.
*Note: Column sum exceeds total because DSAT initiated multiple compliance actions for some entities.
**Note: The sum of the percentages of the Referral types exceeds the total percentage of Referrals because of rounding.

Sixteen of the 70 compliance actions that DSAT initiated from 2013 through 2015 resulted in Corrective Action Plans. Entities voluntarily agreed to participate in these Corrective Action Plans for several reasons. For example, one entity was not providing adequate training to individuals with access to select agents and toxins, as required by the regulations. The entity and DSAT jointly developed a plan to improve training. Of the 16 entities that participated in a Corrective Action Plan, 12 had successfully completed them as of December 2016.

Finally, DSAT initiated four Registration Suspensions from 2013 through 2015. These Registration Suspensions occurred for several reasons. One entity failed to ensure that biosafety and containment procedures could properly contain select agents and toxins, and another had several observations related to training, records management, and/or security. The remaining entities had their registrations suspended for performing unauthorized transfers or allowing unauthorized access to select agents and toxins. All entities that received Registration Suspensions have been reinstated to the FSAP.

Draft CDC risk assessment policies evaluate some, but not all, variables that can inform the risk an entity poses to public health and safety

All Federal agencies are required to integrate risk management activities into their existing practices per the Office of Management and Budget Circular No. A-123 and the Government Accountability Office's *Standards for Internal Control in the Federal Government*. In addition, the 2015 CDC internal review of the FSAP contained several recommendations to help DSAT better align program risk-assessment activities to improve program performance.

CDC has taken some action to address these requirements and recommendations to assess program risk to public health and safety. As of February 2016, DSAT had several draft policies that, when finalized, are intended to assess an entity's risk to public health and safety. For example, DSAT was working with AgSAS to draft a policy to identify observations as serious, moderate, and low risk. This draft policy will assist DSAT in establishing consistent practices for determining the type and timing of compliance actions for an entity on the basis of the observations identified at the entity.

DSAT has also drafted methods for calculating entity risk scores on the basis of an entity's complexity. DSAT plans to consider several factors (e.g., entity size, Biosafety Level) to indicate complexity.[25] DSAT plans to use these entity risk scores to determine the timing of future inspections at entities.

However, DSAT has not yet integrated these risk management activities into a broader profile of entity risk. For example, DSAT has not developed a method for compiling all information about an entity on the basis of these draft policies or other information (e.g., whether an entity has previously reported TLR events, what the risk associated with any reported TLR events was, or whether the entity was subject to a compliance action) over time.

CONCLUSION

CDC's DSAT is responsible for ensuring that entities possessing, using, or transferring select agents and toxins comply with FSAP regulations. If an entity is not meeting FSAP regulations, the entity may pose a risk to public health and safety.

We found that DSAT met its goal of performing a Registration Renewal inspection at least once at nearly all entities in our review registered with the FSAP from 2013 through 2015. We also found that 61 percent of observations that DSAT identified from 2013 through 2015 were associated with two sections in the FSAP regulations: Biosafety and Security. Therefore, DSAT could consider developing additional guidance and training to address entities' vulnerabilities in these areas.

Additionally, in 2015 DSAT exceeded its goal for unannounced inspections to constitute approximately 30 percent of the inspections that it conducts annually; it conducted unannounced inspections four times more than in 2014 or 2013. DSAT did not meet this goal in 2013 or 2014 because it focused on providing assistance and education on regulations updated in October 2012 to a larger number of entity staff by conducting a higher percentage of announced inspections, as more entity staff are present for announced inspections. Unannounced inspections yielded a higher median number of observations per inspection than announced inspections for Registration Renewal inspections and Compliance inspections. Therefore, DSAT could analyze whether unannounced inspections are more effective than announced inspections in identifying observations and enforcing FSAP regulations for certain types of inspections. DSAT could use these results in setting its future goals for unannounced inspections by inspection type.

We also found that entities reported 341 TLR events to DSAT during this timeframe, and that most of these TLR events were Releases. While only one of the TLR events resulted in occupational illness, DSAT could consider monitoring the frequency of the types of TLR events to guide future training and development efforts. DSAT could also consider looking more closely at those entities with no reported TLR events for multiple years, as DSAT has raised concerns that this may indicate a culture of underreporting such events and pose more of a risk than entities that do report TLR events. Not reporting TLR events may also indicate a lack of understanding of when and whether to report TLR events, so DSAT may also want to consider developing further guidance to entities on these topics.

Finally, DSAT has taken some action to address the requirements in the Office of Management and Budget's Circular No. A-123 and specific recommendations from DSAT's 2015 internal review. The risk-assessment policies that DSAT drafted, when finalized, are intended to provide information on how DSAT assesses and mitigates risk in the FSAP. However, we found that DSAT's draft policies evaluate some, but not all, variables that could inform the risk that an entity poses to public health and safety. Establishing effective risk assessment policies is an important way that DSAT can ensure that it has a robust system to develop program activities that appropriately address risk. As DSAT finalizes its draft policies and integrates these risk management activities into a broader risk profile for entities, it may wish to enhance its risk assessment by considering additional factors that may inform an entity's level of risk over time.

This is the first of two related HHS OIG reports on DSAT's oversight of laboratories registered with the FSAP. The second report will provide DSAT with information on responsible officials' oversight of laboratories registered with the FSAP.

APPENDIX A

The 13 Federal Regulatory Sections for Select Agents and Toxins That DSAT Reviews When Conducting Inspections
(42 CFR § Part 73)

Registration and Related Security Risk Assessments……...42 CFR § 73.7

Denial, Revocation, or Suspension of Registration.....42 CFR § 73.8

Responsible Official……...42 CFR § 73.9

Restricting Access to Select Agents and Toxins; Security Risk Assessments…….....…..42 CFR § 73.10

Security……...…….…...42 CFR § 73.11

Biosafety…….....42 CFR § 73.12

Restricted Experiments…….....42 CFR § 73.13

Incident Response….……...……...42 CFR § 73.14

Training…….....42 CFR § 73.15

Transfers.....42 CFR § 73.16

Records…….……...42 CFR § 73.17

Inspections……42 CFR § 73.18

Notification of Theft, Loss, or Release……...…..42 CFR § 73.19

APPENDIX B

Detailed Methodology

We analyzed FSAP regulations, DSAT policy documents, and data in the National Select Agent Registry (NSAR) database that we received from DSAT. The NSAR database contains information about all FSAP inspections, observations, TLR events, and compliance actions during our review period, 2013 through 2015. We also interviewed DSAT staff and obtained draft DSAT and FSAP policies to learn about current and planned program policies, goals, and oversight activities.

Our analysis included activities performed by DSAT for entities (including CDC laboratories) that were registered with the FSAP at any point during our review period. A subset of our analysis included only those entities registered with the FSAP during the full 3-year period of our review. We excluded entities from all of our analyses if they were registered with the FSAP but had only select agents and toxins that were under USDA oversight.

Number and Type of Inspections That DSAT Performed

We analyzed spreadsheets from the NSAR database to calculate the number and type of inspections that DSAT performed at entities registered with the FSAP. We also calculated the median and average number and percentage of these inspection types. Additionally, we calculated the number of entities that were continuously registered with the FSAP from 2013 through 2015, so we could determine whether DSAT performed a Registration Renewal inspection for each of these entities. We collected any policies that described how DSAT determines the type or timeframe of future inspections.

Number of and Reasons for Observations That DSAT Identified

We analyzed spreadsheets from the NSAR database to calculate the number of observations that DSAT found from 2013 through 2015 and to identify the regulatory sections corresponding to these observations. We also identified how many observations resulted from potential noncompliance with other sources, such as the *Biosafety in Microbiological and Biomedical Laboratories* handbook or the *NIH Guidelines*. We calculated the median and average number and percentage of observations. We analyzed the number of observations that DSAT identified on the basis of potential noncompliance with regulations regarding select agents and toxins. As part of our analysis, we noted the regulation sections that DSAT cited as reasons for observations. We also determined the number and average number of observations that resulted from announced and unannounced inspections.

Number of TLR Events That Were Reported to DSAT and the Risk Categories and Levels Associated With These Events

We analyzed spreadsheets from the NSAR database to calculate the number, median, average, and percentage of TLR events from 2013 through 2015. As part of this analysis, we determined whether DSAT classified each event as a Theft, Loss, Release, or Incident. We also determined the occupational risk categories that DSAT assigned to each event (e.g., Minimal/No Exposure, Potential Exposure) and determined the number of TLR events associated with each occupational risk category.

Number of Compliance Actions That DSAT Initiated

We analyzed spreadsheets from the NSAR database to calculate the number and percentage of compliance actions (e.g., Referrals, Corrective Action Plans) that DSAT initiated from 2013 through 2015. We also collected and analyzed policies that described how DSAT determines whether to initiate a compliance action, as well as documentation of all initiated compliance actions from DSAT so we could determine the reasons for these actions. Finally, we determined the status of Referrals to AgSAS, FBI, and HHS OIG.

Limitations

This data brief is based on analysis of DSAT data; we did not independently validate the accuracy or completeness of the data that we analyzed. Any errors or omissions, such as incorrect numbers of inspections performed by DSAT, may affect our results.[26]

Standards

This study was conducted in accordance with the *Quality Standards for Inspection and Evaluation* issued by the Council of the Inspectors General on Integrity and Efficiency.

APPENDIX C

Exhibit C-1: Number and Percentage of Inspections Per Year By Inspection Type, 2013–2015

Inspection Type	Number of Inspections			Total Number of Inspections*	Percentage of Inspections 2013–2015
	2013	2014	2015		
Registration Renewal	92	103	78	273	55%
Verification	29	48	53	130	26%
New Space	7	7	12	26	5%
Compliance	6	7	12	25	5%
Maximum Containment	7	8	5	20	4%
Reinspection	12	0	2	14	3%
New Entity	6	3	1	10	2%
Investigation	0	0	2	2	<0.5%
Total	**159**	**176**	**165**	**500**	**100%**

Source: HHS OIG analysis of DSAT data, 2016.
*Note: In some cases, DSAT inspected the same entities multiple times.

Exhibit C-2: Average Number of Observations Identified From Announced and Unannounced Inspections By Inspection Type, 2013–2015

Inspection Type	Average Number of Observations Per Inspection	
	Announced	Unannounced
Registration Renewal	17	27
Verification	17	12
Compliance	4	12
Reinspection	12	n/a
Investigation	9	n/a
Maximum Containment	10	n/a
New Space	17	n/a
New Entity	33	n/a
Total	**17**	**14**

Source: HHS OIG analysis of DSAT data, 2016.

Exhibit C-3: Type, Number, and Percentage of TLR Events By Year, 2013–2015

TLR Event	Number of TLR Events			Total Number of TLR Events	Percentage of TLR Events 2013–2015
	2013	2014	2015		
Release	97	81	109	287	84%
Loss	17	9	11	37	11%
Incident	0	7	10	17	5%
Theft	0	0	0	0	0%
Total	**114**	**97**	**130**	**341**	**100%**

Source: HHS OIG analysis of DSAT data, 2016.

Exhibit C-4: Type, Number, and Percentage of Compliance Actions Per Year by Type of Compliance Action, 2013–2015

Type of Compliance Action	Number of Compliance Actions			Total Number of Compliance Actions 2013–2015	Percentage of Compliance Actions 2013–2015
	2013	2014	2015		
Referral	15	12	23	50	71%
To AgSAS	*5*	*5*	*15*	*25*	*36%**
To FBI	*9*	*5*	*5*	*19*	*27%**
To HHS OIG	*1*	*2*	*3*	*6*	*9%**
Corrective Action Plan	2	9	5	16	23%
Registration Suspension	1	0	3	4	6%
Application Registration Denial	0	0	0	0	0%
Registration Revocation	0	0	0	0	0%
Total	**18**	**21**	**31**	**70**	**100%**

Source: HHS OIG analysis of DSAT data, 2016.
*Note: The sum of the percentages of the Referral types exceeds the total percentage of Referrals because of rounding.

APPENDIX D

Exhibit D-1: Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
42 CFR § 73.12	**Biosafety**	**2554**
42 CFR § 73.12	*-- Unclassified* [27]	*1857*
--Section 12(a)	*-- An individual or entity required to register under this part must develop and implement a written biosafety plan that is commensurate with the risk of the select agent or toxin, given its intended use. The biosafety plan must contain sufficient information and documentation to describe the biosafety and containment procedures for the select agent or toxin, including any animals (including arthropods) or plants intentionally or accidentally exposed to or infected with a select agent*	*300*
-- Section 12(b)	*-- The biosafety and containment procedures must be sufficient to contain the select agent or toxin (e.g., physical structure and features of the entity, and operational and procedural safeguards)*	*178*
- Section 12(d)	*-- The biosafety plan must include an occupational health program for individuals with access to Tier 1 select agents and toxins, and those individuals must be enrolled in the occupational health program*	*119*
-- Section 12(e)	*-- The plan must be reviewed annually and revised as necessary. Drills or exercises must be conducted at least annually to test and evaluate the effectiveness of the plan. The plan must be reviewed and revised, as necessary, after any drill or exercise and after any incident*	*96*
-- Section 12(c)(3)	*-- In developing a biosafety plan, an individual or entity should consider: The "NIH Guidelines for Research Involving Recombinant DNA Molecules," (NIH Guidelines). This document is available on the National Select Agent Registry Web site at http://www.selectagents.gov*	*3*
-- Section 12(c)(1)	*-- In developing a biosafety plan, an individual or entity should consider: The CDC/NIH publication, "Biosafety in Microbiological and Biomedical Laboratories." This document is available on the National Select Agent Registry Web site at http://www.selectagents.gov*	*1*
42 CFR § 73.11	**Security**	**2369**
-- Subsection (c)(8)	*-- Procedures for informing Responsible Official and other appropriate agencies of suspected criminal activity*	*268*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Subsection (c)(10)	*-- Provisions, policies, and procedures for shipping, receiving, monitoring, and storage of all select agents and toxins to include properly secured containers and contingency plans for unexpected shipments*	*198*
-- Section 11(c)(9)(ii)	*-- Ensure that authorized and authenticated users are only granted access to select agent and toxin related information, files, equipment (e.g., servers or mass storage devices) and applications as necessary to fulfill their roles and responsibilities, and that access is modified when the user's roles and responsibilities change or when their access to select agents and toxins is suspended or revoked*	*164*
-- Section 11(c)(2)	*-- Contain provisions for the control of access to select agents and toxins including the safeguarding of animals (including arthropods) or plants intentionally or accidentally exposed to or infected with a select agent, against unauthorized access, theft, loss or release*	*125*
-- Section 11(c)(9)(iv)	*-- Establish a robust configuration management practice for information systems to include regular patching and updates made to operating systems and individual applications*	*119*
-- Section 11(c)(9)(v)	*-- Establish procedures that provide backup security measures in the event that access control systems, surveillance devices, and/or systems that manage the requirements of section 17 of this part are rendered inoperable*	*119*
-- Section 11(a)	*-- An individual or entity required to register under this part must develop and implement a written security plan. The security plan must be sufficient to safeguard the select agent or toxin against unauthorized access, theft, loss, or release*	*97*
-- Section 11(c)(9)(iii)	*-- Ensure that controls are in place that are designed to prevent malicious code (such as, but not limited to, computer virus, worms, spyware) from compromising the confidentiality, integrity, or availability of information systems which manage access to spaces registered under this part or records in §73.17*	*95*
-- Section 11(c)(5)	*-- Describe procedures for addressing loss or compromise of keys, passwords, combinations, etc. and protocols for changing access numbers or locks following staff changes*	*89*
-- Section 11(c)(1)	*-- Describe procedures for physical security, inventory control, and information systems control*	*81*
-- Section 11(h)	*-- The plan must be reviewed annually and revised as necessary. Drills or exercises must be conducted at least annually to test and evaluate the effectiveness of the plan. The plan must be reviewed and revised, as necessary, after any drill or exercise and after any incident*	*81*
-- Section 11(f)(4)(iii)	*-- Procedures that will limit access to a Tier 1 select agent or toxin to only those individuals who are approved by the HHS Secretary or Administrator, following a security risk assessment by the Attorney General, have had an entity-conducted pre-access suitability assessment, and are subject to the entity's procedures for ongoing suitability assessment*	*67*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 11(f)(4)(iv)	*-- A minimum of three security barriers where each security barrier adds to the delay in reaching secured areas where select agents and toxins are used or stored. One of the security barriers must be monitored in such a way as to detect intentional and unintentional circumventing of established access control measures under all conditions (day/night, severe weather, etc.) The final barrier must limit access to the select agent or toxin to personnel approved by the HHS Secretary or Administrator, following a security risk assessment by the Attorney General*	*60*
-- Section 11(c)(9)(i)	*-- Ensure that all external connections to systems which manage security for the registered space are isolated or have controls that permit only authorized and authenticated users*	*52*
-- Section 11(f)(2)	*-- Describe procedures for how an entity's Responsible Official will coordinate their efforts with the entity's safety and security professionals to ensure security of Tier 1 select agents and toxins and share, as appropriate, relevant information*	*49*
-- Section 11(f)(4)(viii)(A)	*-- The entity must determine that the response time for security forces or local police will not exceed 15 minutes where the response time is measured from the time of an intrusion alarm, or report of a security incident, to the arrival of the responders at the first security barrier*	*49*
-- Section 11(d)(1)	*-- Allow access only to individuals with access approval from the HHS Secretary or Administrator*	*46*
-- Section 11(c)(6)	*-- Contain procedures for reporting unauthorized or suspicious persons or activities, loss or theft of select agents or toxins, release of select agents or toxins, or alteration of inventory records*	*43*
-- Section 11(f)(3)(iii)	*-- Describe procedures for the ongoing assessment of the suitability of personnel with access to a Tier 1 select agent or toxin. The procedures must include the ongoing suitability monitoring of individuals with access to Tier 1 select agents and toxins*	*43*
-- Section 11(f)(4)(ii)	*-- Entities with Tier 1 select agents and toxins must prescribe procedures that limit access to laboratory and storage facilities outside of normal business hours to only those specifically approved by the Responsible Official or designee*	*43*
-- Section 11(f)(4)(v)	*-- Entities with Tier 1 select agents and toxins must prescribe the following security enhancements: All registered space or areas that reasonably afford access to the registered space must be protected by an intrusion detection system (IDS) unless physically occupied*	*41*
-- Section 11(f)(3)(i)	*-- Describe procedures for the ongoing assessment of the suitability of personnel with access to a Tier 1 select agent or toxin. The procedures must include self- and peer-reporting of incidents or conditions that could affect an individual's ability to safely have access to or work with select agents and toxins, or to safeguard select agents and toxins from theft, loss, or release*	*40*
-- Section 11(f)(3)(ii)	*-- Describe procedures for the ongoing assessment of the suitability of personnel with access to a Tier 1 select agent or toxin. The procedures must include the training of employees with access to Tier 1 select agents and toxins on entity policies and procedures for reporting, evaluation, and corrective actions concerning the assessment of personnel suitability*	*40*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 11(b)	*-- The security plan must be designed according to a site-specific risk assessment and must provide graded protection in accordance with the risk of the select agent or toxin, given its intended use. A current security plan must be submitted for initial registration, renewal of registration, or when requested*	*38*
-- Section 11(f)(4)(i)	*-- Entities with Tier 1 select agents and toxins must prescribe the following security enhancements: Procedures that will limit access to a Tier 1 select agent or toxin to only those individuals who are approved by the HHS Secretary or Administrator, following a security risk assessment by the Attorney General, have had an entity-conducted pre-access suitability assessment, and are subject to the entity's procedures for ongoing suitability assessment*	*36*
-- Section 11(f)(1)	*-- In addition to the requirements contained in paragraphs (c) and (d) of this section, the security plan for an individual or entity possessing a Tier 1 select agent or toxin must also: Describe procedures for conducting a pre-access suitability assessment of persons who will have access to a Tier 1 select agent or toxin.*	*34*
-- Section 11(f)(4)(vii)	*-- Entities with Tier 1 select agents and toxins must prescribe the following security enhancements: For powered access control systems, describe procedures to ensure that security is maintained in the event of the failure of access control systems due to power disruption affecting registered space*	*33*
-- Section 11(c)(4)	*-- The security plan must: Establish procedures for removing unauthorized or suspicious persons*	*29*
-- Section 11(f)(4)(vi)	*-- Entities with Tier 1 select agents and toxins must prescribe the following security enhancements: Personnel monitoring the IDS must be capable of evaluating and interpreting the alarm and alerting the designated security response force or law enforcement*	*29*
-- Section 11(d)(6)	*-- Require that individuals with access approval from the HHS Secretary or Administrator refrain from sharing with any other person their unique means of accessing a select agent or toxin (e.g., keycards or passwords)*	*18*
-- Section 11(d)(3)	*-- An individual or entity must adhere to the following security requirements or implement measures to achieve an equivalent or greater level of security: Provide for the control of select agents and toxins by requiring freezers, refrigerators, cabinets, and other containers where select agents or toxins are stored to be secured against unauthorized access (e.g., card access system, lock boxes)*	*17*
-- Section 11(e)(1)	*-- Entities must conduct complete inventory audits of all affected select agents and toxins in long-term storage when any of the following occur: Upon the physical relocation of a collection or inventory of select agents or toxins for those select agents or toxins in the collection or inventory*	*17*
-- Section 11(e)(2)	*-- Entities must conduct complete inventory audits of all affected select agents and toxins in long-term storage when any of the following occur: Upon the departure or arrival of a principal investigator for those select agents and toxins under the control of that principal investigator*	*16*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 11(d)(5)	*-- An individual or entity must adhere to the following security requirements or implement measures to achieve an equivalent or greater level of security: Establish a protocol for intra-entity transfers under the supervision of an individual with access approval from the HHS Secretary or Administrator, including chain-of-custody documents and provisions for safeguarding against theft, loss, or release*	*15*
-- Section 11(c)(7)	*-- The security plan must: Contain provisions for ensuring that all individuals with access approval from the HHS Secretary or Administrator understand and comply with the security procedures*	*13*
-- Section 11(f)(4)(viii)(B)	*-- The entity must: Provide security barriers that are sufficient to delay unauthorized access until the response force arrives in order to safeguard the select agents and toxins from theft, intentional release, or unauthorized access. The response time is measured from the time of an intrusion alarm, or report of a security incident, to the arrival of the responders at the first security barrier*	*13*
-- Section 11(d)(7)(i)	*-- Require that individuals with access approval from the HHS Secretary or Administrator immediately report any of the following to the Responsible Official: Any loss or compromise of keys, passwords, combination, etc.*	*11*
-- Section 11(c)(3)	*-- The security plan must: Contain provisions for routine cleaning, maintenance, and repairs*	*9*
-- Section 11(d)(2)	*-- An individual or entity must adhere to the following security requirements or implement measures to achieve an equivalent or greater level of security: Allow individuals not approved for access from the HHS Secretary or Administrator to conduct routine cleaning, maintenance, repairs, or other activities not related to select agents or toxins only when continuously escorted by an approved individual if the potential for access to select agents or toxins exists*	*6*
-- Section 11(g)	*-- In developing a security plan, an individual or entity should consider the document entitled, "Security Guidance for Select Agent or Toxin Facilities." This document is available on the National Select Agent Registry at http://www.selectagents.gov/*	*6*
-- Section 11(d)(4)	*-- An individual or entity must adhere to the following security requirements or implement measures to achieve an equivalent or greater level of security: Inspect all suspicious packages before they are brought into or removed from the area where select agents or toxins are used or stored*	*5*
-- Section 11(d)(7)(v)	*-- An individual or entity must adhere to the following security requirements or implement measures to achieve an equivalent or greater level of security: Require that individuals with access approval from the HHS Secretary or Administrator immediately report any of the following to the Responsible Official: Any sign that inventory or use records for select agents or toxins have been altered or otherwise compromised*	*4*
-- Section 11(e)(3)	*-- Entities must conduct complete inventory audits of all affected select agents and toxins in long-term storage when any of the following occur: In the event of a theft or loss of a select agent or toxin, all select agents and toxins under the control of that principal investigator*	*4*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 11(d)(7)(ii)	*-- An individual or entity must adhere to the following security requirements or implement measures to achieve an equivalent or greater level of security: Require that individuals with access approval from the HHS Secretary or Administrator immediately report any of the following to the Responsible Official: Any suspicious persons or activities*	*3*
-- Section 11(d)(7)(iv)	*-- An individual or entity must adhere to the following security requirements or implement measures to achieve an equivalent or greater level of security: Require that individuals with access approval from the HHS Secretary or Administrator immediately report any of the following to the Responsible Official: Any release of a select agent or toxin*	*3*
-- Section 11(d)(7)(iii)	*-- An individual or entity must adhere to the following security requirements or implement measures to achieve an equivalent or greater level of security: Require that individuals with access approval from the HHS Secretary or Administrator immediately report any of the following to the Responsible Official: Any loss or theft of select agents or toxins*	*1*
42 CFR § 73.14	**Incident Response**	**1044**
-- Section 14(b)	*-- The incident response plan must fully describe the entity's response procedures for the theft, loss, or release of a select agent or toxin; inventory discrepancies; security breaches (including information systems); severe weather and other natural disasters; workplace violence; bomb threats and suspicious packages; and emergencies such as fire, gas leak, explosion, power outage, and other natural and man-made events*	*173*
-- Section 14(c)	*-- The response procedures must account for hazards associated with the select agent or toxin and appropriate actions to contain such select agent or toxin, including any animals (including arthropods) or plants intentionally or accidentally exposed to or infected with a select agent*	*120*
-- Section 14(e)(1)	*-- Entities with Tier 1 select agents and toxins must have the following additional incident response policies or procedures: The incident response plan must fully describe the entity's response procedures for failure of intrusion detection or alarm system*	*96*
-- Section 14(e)(2)	*-- Entities with Tier 1 select agents and toxins must have the following additional incident response policies or procedures: The incident response plan must describe procedures for how the entity will notify the appropriate Federal, State, or local law enforcement agencies of suspicious activity that may be criminal in nature and related to the entity, its personnel, or its select agents or toxins*	*88*
-- Section 14(d)(12)	*-- The incident response plan must also contain the following information: Decontamination procedures*	*81*
-- Section 14(d)(9)	*-- The incident response plan must also contain the following information: A list of personal protective and emergency equipment, and their locations*	*80*
-- Section 14(f)	*-- The plan must be reviewed annually and revised as necessary. Drills or exercises must be conducted at least annually to test and evaluate the effectiveness of the plan. The plan must be reviewed and revised, as necessary, after any drill or exercise and after any incident*	*68*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 14(d)(11)	*-- The incident response plan must also contain the following information: Procedures for emergency evacuation, including type of evacuation, exit route assignments, safe distances, and places of refuge*	*58*
-- Section 14(d)(10)	*-- The incident response plan must also contain the following information: Site security and control*	*57*
-- Section 14(a)	*-- An individual or entity required to register under this part must develop and implement a written incident response plan based upon a site specific risk assessment. The incident response plan must be coordinated with any entity-wide plans, kept in the workplace, and available to employees for review*	*55*
-- Section 14(d)(5)	*-- The incident response plan must also contain the following information: Personnel roles and lines of authority and communication*	*41*
-- Section 14(d)(6)	*-- The incident response plan must also contain the following information: Planning and coordination with local emergency responders*	*38*
-- Section 14(d)(7)	*-- The incident response plan must also contain the following information: Procedures to be followed by employees performing rescue or medical duties*	*28*
-- Section 14(d)(8)	*-- The incident response plan must also contain the following information: Emergency medical treatment and first aid*	*27*
-- Section 14(d)(1)	*-- The incident response plan must also contain the following information: The name and contact information (e.g., home and work) for the individual or entity (e.g., responsible official, alternate responsible official(s), biosafety officer, etc.)*	*12*
-- Section 14(d)(4)	*-- The incident response plan must also contain the following information: The name and contact information for the physical security official for the building, where applicable*	*10*
-- Section 14(d)(2)	*-- The incident response plan must also contain the following information: The name and contact information for the building owner and/or manager, where applicable*	*8*
-- Section 14(d)(3)	*-- The incident response plan must also contain the following information: The name and contact information for tenant offices, where applicable*	*3*
-- Section 14(c)(9)	*-- The response procedures must account for hazards associated with the select agent or toxin and appropriate actions to contain such select agent or toxin, including any animals (including arthropods) or plants intentionally or accidentally exposed to or infected with a select agent*	*1*
42 CFR § 73.17	**Records**	**1026**
-- Section 17(a)(5)	*-- An individual or entity required to register under this part must maintain complete records relating to the activities covered by this part. Such records must include: Information about all entries into areas containing select agents or toxins, including the name of the individual, name of the escort (if applicable), and date and time of entry*	*162*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 17(a)(1)	*-- Such records must include: An accurate, current inventory for each select agent (including viral genetic elements, recombinant and/or synthetic nucleic acids, and organisms containing recombinant and/or synthetic nucleic acids) held in long-term storage (placement in a system designed to ensure viability for future use, such as in a freezer or lyophilized materials)*	*100*
-- Section 17(a)(7)	*-- An individual or entity required to register under this part must maintain complete records relating to the activities covered by this part. Such records must include: A written explanation of any discrepancies*	*88*
-- Section 17(a)(1)(ii)	*-- Such records must include: An accurate, current inventory for each select agent (including viral genetic elements, recombinant and/or synthetic nucleic acids, and organisms containing recombinant and/or synthetic nucleic acids) held in long-term storage (placement in a system designed to ensure viability for future use, such as in a freezer or lyophilized materials), including: The quantity acquired from another individual or entity (e.g., containers, vials, tubes, etc.), date of acquisition, and the source*	*86*
-- Section 17(b)	*-- The individual or entity must implement a system to ensure that all records and data bases created under this part are accurate, have controlled access, and that their authenticity may be verified*	*85*
-- Section 17(c)	*-- All records created under this part must be maintained for three years and promptly produced upon request*	*57*
-- Section 17(a)(1)(iv)	*-- Such records must include: An accurate, current inventory for each select agent (including viral genetic elements, recombinant and/or synthetic nucleic acids, and organisms containing recombinant and/or synthetic nucleic acids) held in long-term storage (placement in a system designed to ensure viability for future use, such as in a freezer or lyophilized materials), including: When moved from storage and by whom and when returned to storage and by whom*	*56*
-- Section 17(a)(1)(v)	*-- Such records must include: An accurate, current inventory for each select agent (including viral genetic elements, recombinant and/or synthetic nucleic acids, and organisms containing recombinant and/or synthetic nucleic acids) held in long-term storage (placement in a system designed to ensure viability for future use, such as in a freezer or lyophilized materials), including: The select agent used and purpose of use*	*55*
-- Section 17(a)(1)(i)	*-- Such records must include: An accurate, current inventory for each select agent (including viral genetic elements, recombinant and/or synthetic nucleic acids, and organisms containing recombinant and/or synthetic nucleic acids) held in long-term storage (placement in a system designed to ensure viability for future use, such as in a freezer or lyophilized materials), including: The name and characteristics (e.g., strain designation, GenBank Accession number, etc.)*	*49*
-- Section 17(a)(2)	*-- An individual or entity required to register under this part must maintain complete records relating to the activities covered by this part. Such records must include: An accurate, current accounting of any animals or plants intentionally or accidentally exposed to or infected with a select agent (including number and species, location, and appropriate disposition)*	*48*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 17(a)(1)(iii)	*-- Such records must include: An accurate, current inventory for each select agent (including viral genetic elements, recombinant and/or synthetic nucleic acids, and organisms containing recombinant and/or synthetic nucleic acids) held in long-term storage (placement in a system designed to ensure viability for future use, such as in a freezer or lyophilized materials), including: Where stored (e.g., building, room, and freezer)*	*43*
-- Section 17(a)(4)	*-- Such records must include: A current list of all individuals that have been granted access approval from the HHS Secretary or Administrator*	*27*
-- Section 17(a)(3)(iii)	*-- Such records must include: Accurate, current inventory for each toxin held, including: The initial and current quantity amount (e.g., milligrams, milliliters, grams, etc.)*	*24*
-- Section 17(a)(3)	*-- Such records must include: Accurate, current inventory for each toxin held*	*21*
-- Section 17(a)(3)(vi)	*-- Such records must include: Accurate, current inventory for each toxin held, including: When moved from storage and by whom and when returned to storage and by whom including quantity amount*	*19*
-- Section 17(a)(6)	*-- Such records must include: Accurate, current records created under §73.9 and 9 CFR part 121.9 (Responsible Official), §73.11 and 9 CFR part 121.11 (Security), §73.12 and 9 CFR part 121.12 (Biosafety), §73.14 and 9 CFR part 121. 14 (Incident response), and §73.15 and 9 CFR part 121.15 (Training)*	*19*
-- Section 17(a)(3)(ii)	*-- Such records must include: Accurate, current inventory for each toxin held, including: The quantity acquired from another individual or entity (e.g., containers, vials, tubes, etc.), date of acquisition, and the source*	*18*
-- Section 17(a)(3)(v)	*-- Such records must include: Accurate, current inventory for each toxin held, including: Where stored (e.g., building, room, and freezer)*	*16*
-- Section 17(a)(3)(x)	*--Such records must include: If destroyed, the quantity of toxin destroyed, the date of such action, and by whom*	*16*
-- Section 17(a)(3)(iv)	*-- Such records must include: Accurate, current inventory for each toxin held, including: The toxin used and purpose of use, quantity, date(s) of the use and by whom*	*13*
-- Section 17(a)(3)(i)	*-- Such records must include: Accurate, current inventory for each toxin held, including: The name and characteristics*	*9*
- Section 17(a)(1)(vii)	*-- Such records must include: An accurate, current inventory for each select agent (including viral genetic elements, recombinant and/or synthetic nucleic acids, and organisms containing recombinant and/or synthetic nucleic acids) held in long-term storage (placement in a system designed to ensure viability for future use, such as in a freezer or lyophilized materials), including: For intra-entity transfers (sender and the recipient are covered by the same certificate of registration), the select agent, the quantity transferred, the date of transfer, the sender, and the recipient*	*6*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 17(a)(1)(vi)	*-- Such records must include: An accurate, current inventory for each select agent (including viral genetic elements, recombinant and/or synthetic nucleic acids, and organisms containing recombinant and/or synthetic nucleic acids) held in long-term storage (placement in a system designed to ensure viability for future use, such as in a freezer or lyophilized materials), including: Records created under §73.16 and 9 CFR 121.16 (Transfers)*	*4*
-- Section 17(a)(3)(viii)	*-- Such records must include: Accurate, current inventory for each toxin held, including: For intra-entity transfers (sender and the recipient are covered by the same certificate of registration), the toxin, the quantity transferred, the date of transfer, the sender, and the recipient*	*3*
-- Section 17(a)(1)(viii)	*-- Such records must include: An accurate, current inventory for each select agent (including viral genetic elements, recombinant and/or synthetic nucleic acids, and organisms containing recombinant and/or synthetic nucleic acids) held in long-term storage (placement in a system designed to ensure viability for future use, such as in a freezer or lyophilized materials), including: Records created under §73.19 and 9 CFR part 121.19 (Notification of theft, loss, or release)*	*1*
-- Section 17(a)(3)(vii)	*-- Such records must include: Accurate, current inventory for each toxin held, including: Records created under §73.16 and 9 CFR part 121.16 (Transfers)*	*1*
42 CFR § 73.15	**Training**	**566**
-- Section 15(a)(2)	*-- An individual or entity required to register under this part must provide information and training on biosafety, security (including security awareness), and incident response to: Each individual not approved for access to select agents and toxins by the HHS Secretary or Administrator before that individual enters areas where select agents or toxins are handled or stored (e.g., laboratories, growth chambers, animal rooms, greenhouses, storage areas, shipping/receiving areas, production facilities, etc.). Training for escorted personnel must be based on the risk associated with accessing areas where select agents and toxins are used and/or stored*	*212*
-- Section 15(c)	*-- Refresher training must be provided annually for individuals with access approval from the HHS Secretary or Administrator or at such time as the registered individual or entity significantly amends its security, incident response, or biosafety plans*	*137*
-- Section 15(d)	*-- The Responsible Official must ensure a record of the training provided to each individual with access to select agents and toxins and each escorted individual (e.g., laboratory workers, visitors, etc.) is maintained. The record must include the name of the individual, the date of the training, a description of the training provided, and the means used to verify that the employee understood the training*	*99*
-- Section 15(a)(1)	*-- An individual or entity required to register under this part must provide information and training on biosafety, security (including security awareness), and incident response to: Each individual with access approval from the HHS Secretary or Administrator before that individual has such access to select agents and toxins. The training must address the particular needs of the individual, the work they will do, and the risks posed by the select agents or toxins*	*71*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 15(b)	*-- Entities with Tier 1 select agents and toxins must conduct annual insider threat awareness briefings on how to identify and report suspicious behaviors*	*46*
-- Section 15(a)	*-- An individual or entity required to register under this part must provide information and training on biosafety, security (including security awareness), and incident response*	*1*
42 CFR § 73.9	**Responsible Official**	**243**
-- Section 9(a)(6)	*-- An individual or entity required to register under this part must designate an individual to be the Responsible Official. The Responsible Official must: Ensure that annual inspections are conducted for each laboratory where select agents or toxins are stored or used in order to determine compliance with the requirements of this part. The results of each inspection must be documented, and any deficiencies identified during an inspection must be corrected*	*114*
-- Section 9(a)(4)	*-- An individual or entity required to register under this part must designate an individual to be the Responsible Official. The Responsible Official must: Ensure compliance with the requirements of this part*	*69*
-- Section 9(a)(2)	*-- An individual or entity required to register under this part must designate an individual to be the Responsible Official. The Responsible Official must: Be familiar with the requirements of this part*	*17*
-- Section 9(a)(5)	*-- An individual or entity required to register under this part must designate an individual to be the Responsible Official. The Responsible Official must: Have a physical (and not merely a telephonic or audio/visual) presence at the registered entity to ensure that the entity is in compliance with the select agent regulations and be able to respond in a timely manner to onsite incidents involving select agents and toxins in accordance with the entity's incident response plan*	*12*
-- Section 9(b)	*-- An entity may designate one or more individuals to serve as an alternate Responsible Official, who acts for the Responsible Official in his/her absence. These individuals must have the authority and control to ensure compliance with the regulations when acting as the Responsible Official*	*10*
-- Section 9(c)(2)	*-- The Responsible Official must report the identification and final disposition of any select agent or toxin contained in a specimen presented for diagnosis or verification. To report the identification and final disposition of any other select agent or toxin, APHIS/CDC Form 4 must be submitted within seven calendar days after identification. A copy of the completed form must be maintained for three years*	*10*
-- Section 9(a)(3)	*-- An individual or entity required to register under this part must designate an individual to be the Responsible Official. The Responsible Official must: Have authority and responsibility to act on behalf of the entity*	*5*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 9(c)(1)	*--The Responsible Official must report the identification and final disposition of any select agent or toxin contained in a specimen presented for diagnosis or verification* *The identification of any of the following select agents or toxins must be immediately reported by telephone, facsimile, or e-mail: Bacillus anthracis, Botulinum neurotoxins, Botulinum neurotoxin producing species of Clostridium, Burkholderia mallei, Burkholderia pseudomallei Francisella tularensis, Ebola viruses, Marburg virus, Variola major virus (Smallpox virus), Variola minor (Alastrim), or Yersinia pestis. The final disposition of the agent or toxin must be reported by submission of APHIS/CDC Form 4 within seven calendar days after identification. A copy of the completed form must be maintained for three years*	*3*
-- Section 9(d)	*-- The Responsible Official must report the identification and final disposition of any select agent or toxin contained in a specimen presented for proficiency testing. To report the identification and final disposition of a select agent or toxin, APHIS/CDC Form 4 must be submitted within 90 calendar days of receipt of the agent or toxin. A copy of the completed form must be maintained for three years*	*2*
-- Section 9(a)(1)	*-- An individual or entity required to register under this part must designate an individual to be the Responsible Official. The Responsible Official must: Be approved by the HHS Secretary or Administrator following a security risk assessment by the Attorney General*	*1*
42 CFR § 73.7	**Registration and Related Security Assessments**	**192**
-- Section 7(h)(1)	*-- A certificate of registration may be amended to reflect changes in circumstances (e.g., replacement of the Responsible Official or other personnel changes, changes in ownership or control of the entity, changes in the activities involving any select agents or toxins, or the addition or removal of select agents or toxins). Prior to any change, the Responsible Official must apply for an amendment to a certificate of registration by submitting the relevant page(s) of the registration application*	*131*
-- Section 7(h)(3)	*-- A certificate of registration may be amended to reflect changes in circumstances (e.g., replacement of the Responsible Official or other personnel changes, changes in ownership or control of the entity, changes in the activities involving any select agents or toxins, or the addition or removal of select agents or toxins). No change may be made without such approval*	*20*
-- Section 7(h)(2)	*-- A certificate of registration may be amended to reflect changes in circumstances (e.g., replacement of the Responsible Official or other personnel changes, changes in ownership or control of the entity, changes in the activities involving any select agents or toxins, or the addition or removal of select agents or toxins). The Responsible Official will be notified in writing if an application to amend a certificate of registration has been approved. Approval of the amendment may be contingent upon an inspection or submission of additional information, such as the security plan, biosafety plan, incident response plan, or any other documents required to be prepared under this part*	*19*
-- Section 7(a)	*-- Unless exempted under §73.5, an individual or entity shall not possess, use, or transfer any HHS select agent or toxin without a certificate of registration issued by the HHS Secretary. Unless exempted under §73.6 or 9 CFR part 121.6, an individual or entity shall not possess, use, or transfer overlap select agents or toxins, without a certificate of registration issued by the HHS Secretary and Administrator*	*10*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 7(g)	*-- A certificate of registration will be valid for one physical location (a room, a building, or a group of buildings) where the Responsible Official will be able to perform the responsibilities required in this part, for specific select agents or toxins, and for specific activities*	*8*
-- Section 7(i)	*-- An entity must immediately notify CDC or APHIS if it loses the services of its Responsible Official. In the event that an entity loses the services of its Responsible Official, an entity may continue to possess or use select agents or toxins only if it appoints as the Responsible Official another individual who has been approved by the HHS Secretary or Administrator following a security risk assessment by the Attorney General and who meets the requirements of this part*	*2*
-- Section 7(c)(3)(i)	*-- An individual will be deemed to own or control an entity under the following conditions:[1] For a private institution of higher education, an individual will be deemed to own or control the entity if the individual is in a managerial or executive capacity with regard to the entity's select agents or toxins or with regard to the individuals with access to the select agents or toxins possessed, used, or transferred by the entity*	*1*
-- Section 7(e)	*-- Prior to the issuance of a certificate of registration, the Responsible Official must promptly provide notification of any changes to the application for registration by submitting the relevant page(s) of the registration application*	*1*
42 CFR § 73.16	**Transfers**	**58**
-- Section 16(a)	*-- Except as provided in paragraphs (c) and (d) of this section, a select agent or toxin may only be transferred to individuals or entities registered to possess, use, or transfer that agent or toxin. A select agent or toxin may only be transferred under the conditions of this section and must be authorized by CDC or APHIS prior to the transfer[4]* *[4]This section does not cover transfers within an entity when the sender and the recipient are covered by the same certificate of registration*	*19*
-- Section 16(l)(i)	*-- A registered individual or entity transferring an amount of a HHS toxin otherwise excluded under the provisions of §73.3(d) must: Transfer the amounts only after the transferor uses due diligence and documents that the recipient has a legitimate need (i.e., reasonably justified by a prophylactic, protective, bona fide research, or other peaceful purpose) to handle or use such toxins*	*14*
-- Section 16(e)	*-- To obtain authorization for transfer, APHIS/CDC Form 2 must be submitted*	*6*
-- Section 16(l)(ii)	*-- A registered individual or entity transferring an amount of a HHS toxin otherwise excluded under the provisions of §73.3(d) must: (2) Report to CDC if they detect a known or suspected violation of Federal law or become aware of suspicious activity related to a toxin listed in §73.3(d) of this part*	*6*
-- Section 16(f)	*--After authorization is provided by APHIS or CDC, the packaging of the select agent(s) and toxin(s) is performed by an individual approved by the HHS Secretary or Administrator to have access to select agents and toxins and is in compliance with all applicable laws concerning packaging*	*4*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 16(i)	*-- The recipient must submit a completed APHIS/CDC Form 2 within two business days of receipt of a select agent or toxin*	*4*
-- Section 16(h)	*-- Transportation in commerce starts when the select agent(s) or toxin(s) are packaged for shipment and ready for receipt by a courier transporting select agent(s) or toxin(s) and ends when the package is received by the intended recipient who is an individual approved by the HHS Secretary or Administrator to have access to select agents and toxins, following a security risk assessment by the Attorney General*	*3*
-- Section 16(b)(1)(i)	*-- A transfer may be authorized if: The sender: Has at the time of transfer a certificate of registration that covers the particular select agent or toxin to be transferred and meets all requirements in this part*	*2*
42 CFR § 73.19	**Notification of Theft, Loss, or Release**	**28**
-- Section 19(a)	*-- Upon discovery of the theft or loss of a select agent or toxin, an individual or entity must immediately notify CDC or APHIS and appropriate Federal, State, or local law enforcement agencies. Thefts or losses must be reported even if the select agent or toxin is subsequently recovered or the responsible parties are identified*	*14*
-- Section 19(b)	*-- Upon discovery of a release of an agent or toxin causing occupational exposure or release of a select agent or toxin outside of the primary barriers of the biocontainment area, an individual or entity must immediately notify CDC or APHIS*	*9*
-- Section 19(a)(2)	*-- Upon discovery of the theft or loss of a select agent or toxin, an individual or entity must immediately notify CDC or APHIS and appropriate Federal, State, or local law enforcement agencies. Thefts or losses must be reported even if the select agent or toxin is subsequently recovered or the responsible parties are identified. A completed APHIS/CDC Form 3 must submitted within seven calendar days*	*2*
-- Section 19(b)(2)	*-- Upon discovery of a release of an agent or toxin causing occupational exposure or release of a select agent or toxin outside of the primary barriers of the biocontainment area, an individual or entity must immediately notify CDC or APHIS. A completed APHIS/CDC Form 3 must be submitted within seven calendar days*	*2*
-- Section 19(a)(1)(i)	*-- Upon discovery of the theft or loss of a select agent or toxin, an individual or entity must immediately notify CDC or APHIS and appropriate Federal, State, or local law enforcement agencies. Thefts or losses must be reported even if the select agent or toxin is subsequently recovered or the responsible parties are identified. The theft or loss of a select agent or toxin must be reported immediately by telephone, facsimile, or e-mail. The following information must be provided: The name of the select agent or toxin and any identifying information (e.g., strain or other characterization information)*	*1*
42 CFR § 73.10	**Restricting Access to Select Agents and Toxins; Security Risk Assessments**	**27**
-- Section 10(k)	*-- The Responsible Official must immediately notify CDC or APHIS when an individual's access to select agents or toxins is terminated by the entity and the reasons therefore*	*13*

continued on next page

Exhibit D-1 (Continued): Number of Observations for Each of the 13 Regulatory Sections That DSAT Reviews and Associated Subsections Identified From 2013 Through 2015

Regulatory Section and Subsection	Brief Description	Number of Times Identified in DSAT Inspections, 2013–2015
-- Section 10(a)	*-- An individual or entity required to register under this part may not provide an individual access to a select agent or toxin, and an individual may not access a select agent or toxin, unless the individual is approved by the HHS Secretary or Administrator, following a security risk assessment by the Attorney General*	*10*
-- Section 10(j)	*-- Access approval is valid for a maximum of three years*	*3*
-- Section 10(b)	*-- An individual will be deemed to have access at any point in time if the individual has possession of a select agent or toxin (e.g., ability to carry, use, or manipulate) or the ability to gain possession of a select agent or toxin*	*1*
42 CFR § 73.13	**Restricted Experiments**	**4**
-- Section 13(a)	*-- An individual or entity may not conduct, or possess products resulting from, the following experiments unless approved by and conducted in accordance with the conditions prescribed by the HHS Secretary*	*3*
-- Section 13(b)(2)	*-- An individual or entity may not conduct, or possess products resulting from, the following experiments unless approved by and conducted in accordance with the conditions prescribed by the HHS Secretary: Experiments involving the deliberate formation of synthetic or recombinant DNA containing genes for the biosynthesis of select toxins lethal for vertebrates at an LD[50] <100*	*1*
42 CFR § 73.8	**Denial, Revocation, or Suspension of Registration**	**0**
42 CFR § 73.18	**Inspections**	**0**

Source: HHS OIG analysis of DSAT data, 2016.

ACKNOWLEDGMENTS

This report was prepared under the direction of Dwayne Grant, Regional Inspector General for Evaluation and Inspections in the Atlanta regional office and Jaime Stewart, Deputy Regional Inspector General.

Victoria Coxon served as lead analyst for this study. Office of Evaluation and Inspections staff who provided support include Kevin Farber, Althea Hosein, Christine Moritz, and Melicia Seay.

ENDNOTES

[1] CDC. *2015 Annual Report of the Federal Select Agent Program.* Accessed at http://www.selectagents.gov/resources/FSAP_Annual_Report_2015.pdf on June 23, 2016. An erratum to this report was issued November 18, 2016, and is available at https://www.selectagents.gov/resources/FSAP_Annual_Report_2015_ERRATUM.pdf.

[2] 42 CFR § 73.9(a)(4). CDC/DSAT and APHIS/AgSAS. *Responsible Official Resource Manual*. Accessed at https://www.selectagents.gov/resources/RO_Manual_2014.pdf on March 15, 2017.

[3] DSAT is housed within CDC's Office of Public Health Preparedness and Response (OPHPR). OPHPR, DSAT, *Division of Select Agents and Toxins: About the Federal Select Agent Program*. Accessed at https://www.cdc.gov/phpr/dsat/about-fsap.htm on February 2, 2017.

[4] CDC, *Justification of Estimates for Appropriations Committees*. Accessed at https://www.cdc.gov/budget/documents/fy2017/fy-2017-cdc-congressional-justification.pdf on November 10, 2016.

[5] 42 CFR § 73.7(a).

[6] Regulations at 42 CFR pt. 73 implement the provisions of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, which sets forth the requirements for possession, use, and transfer of select agents and toxins. These select agents and toxins have the potential to pose a *severe* threat to public health and safety and are subject to regulation by both CDC and APHIS. Entities registered with the FSAP must also comply with regulations at 7 CFR pt. 331 and 9 CFR pt. 121. However, regulations at 7 CFR pt. 331 apply only to plant or animal health or products and are not under the jurisdiction of CDC. The regulations at 9 CFR pt. 121 are under the jurisdiction of both CDC and APHIS. For the purpose of our review, we could not distinguish observations identified by CDC versus APHIS under this regulation. Therefore, we did not include them in our review.

[7] CDC and NIH, *Biosafety in Microbiological and Biomedical Laboratories*, 5th edition. Accessed at https://www.cdc.gov/biosafety/publications/bmbl5/bmbl.pdf on January 20, 2017. This handbook is an advisory document that contains best practices for the safe conduct of work in biomedical and clinical laboratories. It is based on the principles of containment and risk assessment.

[8] NIH, *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines)*, April 2016. Accessed at http://osp.od.nih.gov/sites/default/files/resources/NIH_Guidelines.pdf on January 20, 2017. The *NIH Guidelines* specifies the practices for constructing and handling: (i) recombinant nucleic acid molecules; (ii) synthetic nucleic acid molecules, including those that are chemically or otherwise modified but can base pair with naturally occurring nucleic acid molecules; and (iii) cells, organisms, and viruses containing such molecules.

[9] CDC. *2015 Annual Report of the Federal Select Agent Program*, p.2. Accessed at http://www.selectagents.gov/resources/FSAP_Annual_Report_2015.pdf on June 23, 2016. An erratum to this report was issued November 18, 2016, and is available at https://www.selectagents.gov/resources/FSAP_Annual_Report_2015_ERRATUM.pdf.

[10] DSAT/USDA. *Select Agents and Toxins Theft, Loss, or Release Document.* Accessed at http://www.selectagents.gov/resources/CompleteTHEFT%20LOSS%20%20RELEASE%20guidance%20document%20June82010_FINAL.pdf on April 12, 2016.

[11] 81 FR 96457–96459 (Dec. 30, 2016) (CDC, OPHPR, *Proposed Data Collection Submitted for Public Comment and Recommendations*). Accessed at https://www.gpo.gov/fdsys/pkg/FR-2016-12-30/pdf/2016-31740.pdf on January 11, 2017.

[12] Examples of other documents that DSAT reviews may include entity plans for biosafety, biosecurity, and incident response; annual drill/exercise information; occupational health program plans; or entity access records. CDC. *Preparing For and Performing Inspections, Operations Branch* (SOP Number SAPRG.INSPC.2012, effective August 9, 2013–August 8, 2015), pp. 29–36; CDC, *Preparing For and Performing Inspections, Operations Branch* (SOP Number POB.4, effective November 30, 2015–November 30, 2018), pp. 37-39.

[13] 42 CFR § 73.8.

[14] Federal Select Agent Program, *General FAQ's About Select Agents and Toxins*, question 12: "What Is the Corrective Action Plan program?" Accessed at http://www.selectagents.gov/faq-general.html on May 2, 2016.

[15] 42 CFR § 73.8.

[16] Ibid.

[17] DSAT, *Division of Select Agents and Toxins: Enforcement of Select Agent and Toxin Regulations.* Accessed at http://www.cdc.gov/phpr/dsat/enforcement.htm on September 15, 2016. Civil monetary penalties can be levied (up to $250,000 for an individual for each violation and up to $500,000 for an entity for each violation) or criminal enforcement can be taken (imprisonment for up to 5 years, a fine, or both).

[18] Office of Management and Budget, *Circular A-123*. Accessed at https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2016/m-16-17.pdf on October 28, 2016.

[19] CDC, *90-Day Internal Review of the Select Agents and Toxins Program.* Accessed at http://www.cdc.gov/phpr/dsat/documents/90-day_report.pdf on September 3, 2015.

[20] The average number of inspections per entity from 2013 through 2015 was two. The entity with 14 inspections is not typical and represents a special case. This entity was one of only six entities registered as Biosafety Level 4 (BSL 4). It is also registered as a BSL 3 and a BSL 2 entity. (See Endnote 25 for a description of BSLs.) This entity had the third-highest number of Principal Investigators, the third-highest number of select agents and toxins, and the highest number of laboratories handling select agents and toxins. (Principal Investigators are the individuals whom entities designate to direct a project or program and to be responsible to the entity for the scientific and technical direction of that project or program.) In part because of these characteristics, this entity had a total of 14 inspections: 3 Registration Renewal (announced) inspections, 4 New Space inspections, 4 Maximum Containment inspections, 1 Compliance (announced) inspection, and 2 Reinspection (announced) inspections.

[21] Three of the six entities received at least one Verification inspection, and the remaining three received one of the following inspection types—or a combination of them—during our review period: Compliance, Reinspection, New Space, Investigation, New Entity.

[22] The average number of observations per entity was 29. The entity with 161 observations is not typical and represents a special case, as it has the highest number of laboratories (39) of all entities in our review. This entity is registered as both a BSL 2 and a BSL 3 entity. It is also one of 5 entities with 6 Principal Investigators and 1 of 23 entities with a total of 3 kinds of select agents or toxins. In part because of these characteristics but also because of the addition of new select-agent laboratory space, this entity had a total of three inspections: two Renewal (announced) inspections and one New Space inspection.

[23] Updates to the regulations occurred at 42 CFR §§ 73.3–73.6.; these sections were amended by the final rule entitled *Possession, Use, and Transfer of Select Agents and Toxins, Biennial Review* (77 Fed. Reg. 194 (Oct. 5, 2012)), effective December 4, 2012). The final rule made updates pertaining to Tier 1 agents, which present the greatest risk of deliberate misuse with significant potential for mass casualties or devastating effect to the economy, critical infrastructure, or public confidence, and pose a severe threat to public health and safety. CDC, *General*

FAQ's About Select Agents and Toxins. Accessed at https://www.selectagents.gov/faq-general.html on December 13, 2016.

[24] The average number of TLR events per entity was five. The entity with 56 TLR events is not typical and represents a special case. This entity is one of only six entities registered as BSL 4. This entity is also registered as a BSL 3 and a BSL 2 entity. This entity has the highest number of Principal Investigators, the highest number of select agents and toxins, and the seventh-highest number of laboratories handling select agents and toxins. In part because of these characteristics, this entity had a total of 4 inspections: 1 Registration Renewal (announced) inspection, 1 Verification (announced) inspection, 1 Compliance (announced) inspection, and 1 Maximum Containment inspection.

[25] BSLs are assigned to entities on the basis of the type of select agents and toxins they possess, use, or transfer. BSLs dictate how often the entity must be inspected. Entities designated as BSL 4—the highest level—are authorized to use Tier 1 Select Agents and Toxins, such as the Ebola, Marburg, or smallpox viruses and are required to receive a minimum of two inspections per year. Entities registered as BSL 3 are authorized to use select agents and toxins that cause serious or potentially lethal disease through respiratory transmission, such as *Mycobacterium tuberculosis*, the bacteria that causes tuberculosis. Entities registered as BSL 2 work with select agents or toxins that pose moderate hazards to laboratorians and the environment, such as *Staphylococcus aureus*.

[26] The number of observations, inspections, TLR events, and compliance actions in 2015 in this report differ from those in DSAT's *2015 Annual Report of the Federal Select Agent Program* because we reviewed only DSAT entities. In contrast, DSAT reviewed the entire select agent program in 2015 and reported aggregate numbers (i.e., those both from DSAT and AgSAS entities) when describing the number of inspections, observations, TLR events, and compliance actions. Additionally, HHS OIG used different methods than DSAT when calculating the number of Corrective Action Plans in 2015. HHS OIG calculated the number of Corrective Action Plans *initiated* in 2015, while DSAT calculated the number of entities *participating* in Corrective Action Plans in 2015. This resulted in DSAT reporting more corrective action plans in 2015 than HHS OIG.

[27] These observations are the result of departures that fall under 42 CFR § 73.12 but originate from guidance in other sources such as the *Biosafety in Microbiological and Biomedical Laboratories* or the *NIH Guidelines*. On the basis of guidance from DSAT, we grouped 1,857 observations resulting from potential noncompliance with these documents as "unclassified" potential noncompliance with the regulations regarding select agents and toxins at 42 CFR § 73.12.