

**U.S. IMMIGRATION AND CUSTOMS ENFORCEMENT  
HOMELAND SECURITY INVESTIGATIONS**

**HSI Directive 23-01: Use of Additive Material Three-Dimensional Printing Equipment**

**Issue Date:** November 6, 2023

**Superseded:** None.

1. **Purpose/Background.** This Directive establishes U.S. Immigration and Customs Enforcement (ICE), Homeland Security Investigations (HSI) policy and procedures governing the use and operation of Additive Material Three-Dimensional Printing (here after referred to as 3D printing) equipment by HSI personnel. 3D printing is an invaluable technology that offers the ability to (b) (7)(E) and other custom items. HSI continuously assesses its use of technologies to ensure that procedures and applicable policies reflect best practices with respect to lawful use and HSI's law enforcement and national security missions.

2. **Policy.** It is the policy of HSI that 3D printing equipment shall be operated in a safe, lawful, and efficient manner in furtherance of HSI's missions. HSI may utilize 3D printing equipment in a variety of its missions, including, but not limited to, (b) (7)(E)

Operation of 3D printing  
equipment shall be used solely for official purposes in compliance with this Directive. This Directive applies to the same extent to HSI use of non-agency 3D printing equipment as it does to equipment owned and used by HSI.

3. **Definitions.** The following definitions apply for purposes of this Directive only:

3.1. **3D Printed Item.** Any object created as a result of 3D printing.

3.2. **3D Printing.** A manufacturing process that creates three-dimensional objects by depositing material layer by layer.

3.3. **3D Printing Equipment.** Software and computers used for 3D printing and 3D printers.

3.4. **Dangerous Weapon.** A weapon, device, instrument, material, or substance, animate or inanimate, that is used for, or is readily capable of, causing death or serious bodily injury, except that such term does not include a pocketknife with a blade of less than 2½ inches in length.

- 3.5. Filament.** The thermoplastic material used by fused deposition modeling (FDM) 3D printers to create objects. Filaments come in different materials such as polylactic acid (PLA), acrylonitrile butadiene styrene (ABS), nylon, etc.
- 3.6. Firearm and Firearm Component.** As defined in Title 18, United States Code (U.S.C.), Section 921(a)(3), the term “firearm” means any weapon (including a starter gun) which will or is designed to, or may readily be converted to, expel a projectile by the action of an explosive; the frame or receiver of such weapon; any firearm muffler or firearm silencer; or any destructive device. A firearm component is any accessory that attaches to a firearm temporarily or permanently, including, but not limited to, a magazine, cartridge, grip, or rail attachment.
- 3.7. Fused Deposition Modeling (FDM).** A 3D printing technology that extrudes molten material, typically plastic, to create objects.
- 3.8. Material Jetting (MJ).** A 3D printing technology that sprays or jets liquid photopolymers or wax into layers that are then cured by ultraviolet (UV) light or heat.
- 3.9. Resin.** A liquid material utilized by Stereolithography (SLA), MJ, and some other types of 3D printing equipment that changes its properties when subjected to light (UV, laser, etc.).
- 4. Responsibilities.**
- 4.1.** The **Executive Associate Director of HSI** is responsible for the oversight of the provisions of this Directive.
- 4.2.** The **Assistant Director of the HSI Cyber and Operational Technology (COT) Division** is responsible for ensuring the overall implementation of the provisions of this Directive within HSI.
- 4.3.** The **Unit Chief of the HSI Technical Operations Unit** is responsible for:
- 1) Implementing the provisions of this Directive within HSI;
  - 2) Designating Authorized Users;
  - 3) Designating authorized 3D printing equipment;
  - 4) Promulgating an authorized 3D printing approval process and request form;
  - 5) Designating the basic and advanced training requirements for HSI employees operating 3D printing equipment, meeting the requirements in this Directive, and ensuring that 3D printing training is uniform for all HSI employees;

- 6) Promulgating any maintenance and operation requirements; and
- 7) Coordinating device management, acquisition, and disposal of HSI-owned 3D printing equipment.

**4.4. Special Agents in Charge (SACs)** are responsible for implementing the provisions of this Directive within their area of responsibility (AOR) and approving the use of 3D printing equipment owned by another agency or AOR for HSI-led operations in instances where HSI-owned equipment is unavailable. As stated in Section 2, this Directive applies to the same extent to HSI use of non-agency 3D printing equipment as it does to equipment owned and used by HSI. The use of non-agency 3D printing equipment shall be approved by the SAC only in cases of necessity.

**4.5. First-Line Supervisors** are responsible for ensuring that all requirements set forth in this Directive have been met prior to approving any printing requests.

**4.7. Technical Enforcement Officers (TEOs) and Special Agents** are responsible for complying with the provisions of this Directive. TEOs shall be responsible for the annual inventory of 3D printing equipment which is documented in Sunflower Sentry.

**4.8. Authorized Users** are designated by the Unit Chief of the Technical Operations Unit and are responsible for conducting 3D printing using HSI-authorized 3D printing equipment in compliance with this Directive.

## **5. Procedures/Requirements.**

### **5.1. General Guidelines.**

- 1) Authorized Personnel. HSI employees are not authorized to utilize HSI 3D printing equipment unless they have been designated as Authorized Users by the Unit Chief of the Technical Operations Unit and have completed an HSI-approved 3D printing training course.
- 2) Official Purpose. Operation of 3D printing equipment shall be solely for official purposes in compliance with this Directive and shall not be used for any personal benefit of the operator or another individual. All 3D printed items are considered government property until properly disposed of in compliance with this Directive.
- 3) Authorized Equipment and Use. HSI-owned 3D printing equipment shall be tracked in **(b) (7)(E)** and operated only by Authorized Users. HSI Authorized Users shall operate 3D printing equipment only for official use when the equipment is:
  - 1) owned by HSI and authorized by the Unit Chief of the Technical Operations Unit;
  - 2) supplied by an HSI contractor on loan to replace equipment under repair or for demonstration; or
  - 3) owned by a partner law enforcement agency, where the partner

agency 3D printing equipment is approved for use by the SAC in whose AOR the equipment is being utilized.

Any non-HSI-owned 3D printers approved by the SAC must be used in compliance with this Directive. Any Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA) between HSI and another agency or a vendor shall include a statement that this Directive governs the use of the 3D equipment. To the extent that any existing MOU or MOA is silent on the issue, this Directive governs the use of non-HSI-owned equipment, as well as the prohibition on the use of HSI-owned equipment by non-HSI personnel. For the purpose of this Directive, HSI-credentialed task force officers in good standing are considered HSI personnel.

- 4) Unauthorized 3D Printing. HSI employees and HSI-credentialed task force officers are not authorized to utilize HSI 3D printing equipment to manufacture firearms, firearms components, and dangerous weapons. The Technical Operations Unit is the only entity within HSI authorized to 3D print firearm components for the purpose of **(b) (7)(E)**
- 5) Printing Requests. Any request for 3D printing shall be submitted on an approved 3D printing request form reviewed and signed by the requestor's and the authorized user's first-line supervisor. The form shall contain the name of the requesting party, the HSI case number, a detailed description of the item to be printed, and the way the item shall be used, along with any other considerations. The Authorized User shall document the specific 3D printing equipment used, the type of filament or resin, the total printing time, and date the item was printed. First-line supervisors shall ensure that all requirements set forth in this Directive have been met prior to approving any printing request.
- 6) Logging of Printed Items. Any HSI-operated 3D printer shall always be accompanied by a dedicated paper 3D Printing Log detailing the items that have been printed. The log shall contain details of all printing activity, including machine maintenance, successful prints, test prints and failed prints, the date and time of each event, and the name of the Authorized User who conducted the 3D printing.
- 7) Misuse. HSI personnel shall comply with the provisions of this Directive, know the limits of HSI authority, use this authority judiciously, and ensure comprehension and completion of any training programs. Any misuse of 3D printing equipment or any violation of this Directive may result in discipline up to, and including, removal from federal service. HSI personnel shall contact the ICE Office of Professional Responsibility Joint Intake Center for instances of suspected misuse or abuse of 3D printing equipment.
- 8) Training. Personnel are required to attend training before being designated as Authorized Users. The Unit Chief of the HSI Technical Operations Unit is

responsible for the development and coordination of the initial and advanced training requirements for the use of 3D printing and shall consult with the Office of the Principal Legal Advisor and other Directorates or Program Offices for assistance in developing the curriculum and/or presenting the material as needed or validating trade school or vendor training.

- 9) Storage. All 3D printing equipment shall be stored in a secure location as sensitive equipment, in accordance with the Technical Operations Handbook (HSI HB 14-04), dated July 21, 2014, or as updated. Access to 3D printing equipment and related post-processing equipment shall be limited to Authorized Users only.

## **5.2. Health and Safety.**

- 1) Hazards. 3D printing presents several potential hazards to the health and safety of personnel including, but not limited to, exposure to volatile organic compounds (VOCs), particulates, solvents, and other chemicals, and to hot surfaces and moving parts.
- 2) Engineering Controls. 3D printing equipment should only be operated in an area with a dedicated ventilation system that is away from other work areas. Each type of media should be evaluated prior to use to ensure that the proper precautions have been taken based on the hazards unique to the printing process. Printing equipment should be fully enclosed and equipped with local exhaust ventilation or used within a fume hood whenever possible. Areas where printing materials are handled or cured and/or where caustics are used and support material is cleaned or removed should also be ventilated to control hazardous emissions.
- 3) Administrative Controls. Authorized personnel shall take all reasonable steps to reduce time spent near operational 3D printing equipment and utilize remote monitoring when possible. When practical, personnel should use filaments that are known to emit less VOCs, such as PLA, unless such materials are not appropriate for the application.
- 4) Personal Protective Equipment (PPE). When the hazards of 3D printing cannot be effectively mitigated through the implementation of engineering or administrative controls, personnel are required to wear PPE, including lab coats or coveralls, nitrile or chemical resistant gloves, safety glasses, goggles or face shields, and respiratory protection. PPE should be appropriate for the activity, and proper PPE disposal and replacement procedures shall be followed.
- 5) Fire Safety. 3D printing equipment utilizing combustible media such as powdered metals or carbon nanotubes shall be reviewed and used in compliance with fire safety and other health and safety requirements. Combustible media and flammable liquids shall be stored in fire resistant containers or cabinets, in accordance with the manufacturer's recommendations, with appropriate fire safety equipment located

nearby. Combustible waste shall be stored in appropriate fire-resistant trash receptacles in accordance with the manufacturer's recommendations.

### **5.3. Waste Disposal.**

Chemical Waste. All chemical waste, including uncured resins, powdered metals, caustic baths, and other related hazardous chemicals, shall be handled, stored, transported, recycled, or disposed of in accordance with manufacturer's recommendations, and national and local regulations. The highest ranking official, or designee, with oversight over the 3D printing equipment within their area of responsibility, is responsible for complying with the above.

### **5.4. Destruction and Disposal of 3D Printed Items.**

Disposal of 3D Printed Items. All items created under this Directive, unless otherwise specified, shall be disposed of in a manner that renders the items unusable and unattributable to HSI, and complies with all local laws. The disposal shall be documented using ICE Form 12-023, Certificate of Disposal. Conversion of disposed 3D printed items for personal or outside use is strictly prohibited.

## **6. Recordkeeping.**

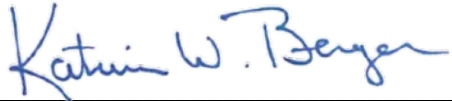
All records created under this Directive shall be maintained in accordance with the records schedules in the National Archives and Records Administration, General Records Schedule 5.4, Items 100, 110, 120, and 130.

## **7. Authorities/References.**

- 7.1. Public Law 107-296, Homeland Security Act of 2002.
- 7.2. 18 U.S.C. § 922, Undetectable Firearms Act of 1988.
- 7.3. ICE Directive 19009.3, ICE Firearms and Use of Force, dated May 26, 2023, or as updated, and its accompanying Firearms and Use of Force Handbook, dated August 3, 2021, or as updated.
- 7.4. ICE Directive 1022.1 (former number: 1-15.0), Table of Offenses and Penalties (TOP), and its accompanying "Guidelines and Instructions on Use of the Table of Offenses and Penalties," dated December 8, 2006, or as updated.
- 7.5. HSI HB 14-04, Technical Operations Handbook, dated July 21, 2014, or as updated.

## **8. Attachments.** None.

9. **No Private Right.** This Directive provides only internal HSI policy guidance, which may be modified, rescinded, or superseded at any time without notice. It is not intended to, does not, and may not be relied upon to create any right or benefit, substantive or procedural, enforceable at law by any party in any administrative, civil, or criminal matter. Likewise, no limitations are placed by this guidance on the otherwise lawful enforcement or litigative prerogatives of HSI.



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