Template only MUST modify to site conditions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Site / Area: |  | Date of Assessment |  | Risk Assessment # | **021RA** |
| Completed by (name) |  | Signature |  | | |
| In Consultation with: |  | Signature |  | | |
| Identify / describe activity, equipment, area or event you are assessing: | | | 3D PRINTER  (Polylactic Acid – PLA; Acrylonitrile Butadiene Styrene – ABS) | | |
| Authorised by: |  | Signature: |  | Date: |  |
| **In conjunction with this risk assessment, training / education and development of a relevant SOP may be required.** | | | | | |
| **Step 1:** **Identify the hazard/s / Impact:**What do you believe are the hazards? What could happen? | | **Step 2: Assess the potential risks:**  What do you believe are the risks?  How could this happen? | | **Step 3: Reducing the risk:**  What do you believe can be done to reduce the risk?  Controls | |
| **Extreme Temperatures**   * High temperatures | | * Contact with hot extrusion head or finished model could cause burns * Fire | | * Enclosed system * Wear oven gloves when removing parts from the heat treatment oven * Keep paper and combustibles away from the 3D printer * Never leave 3D printer unattended while in use (for long hour printing, check intermittently) * Fire extinguisher available (CO2 or dry powder) | |
| **Hazardous Chemicals**   * Toxic emissions * Fumes and particles * Ultrafine particle (UFP) * Volatile Organic Compounds (VOC) | | * Exposure to uncured and partially cured 3D printer material fumes can result in health effects on the respiratory system | | * PLA filaments preferred over ABS. * Ventilation / extraction system installed * Carbon filters / HEPA filters in use * Used in well-ventilated room where windows can be open & or there is good air flow * Safety Data Sheets (SDS’s) available | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Electricity**   * Frayed cords * Faulty appliances * Overheating equipment * Cutting cords * Contact with exposed wires | | | | * Burns * Fire * Explosion * Electrocution * Electric shock | | | | * Printer is tested & tagged * RCD installed at main switchboard and checked regularly * Repairs & modifications by competent person only |
| **Machinery & Equipment**   * Mechanical hazards (stepper motors, pulleys, threaded rods, carriages and small fans) | | | | * Entrapment / entanglement * Lacerations * Cuts * Bruising | | | | * Ensure 3D printer is covered with a protective hood / cabinet, fitted with an interlocking switch to prevent it from being open / opened whilst in operation * Hair, loose clothing is secured |
| **Airborne Contaminants**   * Post Printing – dust (UFP) | | | | * Respiratory problems * Foreign body in eye | | | | * Avoid sanding; use scraping tools to clean up student models. * Eye protection to be worn * Work done in a well-ventilated area. |
| **Other**   * Tools (used for cleaning e.g. metal scraper / knife blade to clean build plate) | | | | * Cuts * Lacerations | | | | * Cleaning to be carried out by a competent person. * **Students are NOT permitted to clean the 3D printers** |
| * **Other** | | | |  | | | |  |
| **Review hazard / risk assessment if task or circumstances change & at intervals appropriate to the level of risk (minimum 5 years)** | | | | | | | | |
| **Step 4: Monitor & Review:** | | | | | | | | |
| Were the controls effective? | | | | Were there any unforeseen hazards / incidents? | | | | New controls |
| Yes |  | No |  | Yes |  | No |  |
|  | | | |  | | | |  |