13.5. Media and IT Equipment Destruction

Objective

13.5.1. To ensure media and IT equipment that cannot be sanitised is safely destroyed before disposal in an environmentally responsible manner.

Context

Scope

13.5.2. This section covers information relating to the destruction of media and IT equipment. Further information relating to the destruction of IT equipment can be found in Section 12.6 - Product Sanitisation and Disposal.

13.5.3. Any IT, electrical or electronic equipment MUST be destroyed and disposed of in an environmentally safe and responsible manner. This reflects an increasing responsibility for improved equipment end-of-life treatment and environmentally responsible disposal solutions, while continuing to meet security and data protection requirements.

Evolution of electronic components and equipment

13.5.4. The capability of various types of electronic equipment to store data has increased significantly with technology advances such as solid-state drives (SSDs) and on-board memory devices. In turn these present a rich target of opportunity to, amongst others, cyber-criminals, unauthorised investigators, and foreign intelligence services. Data may include, for example, identity, account numbers, physical addresses, transactions, cryptographic keys, strategic, financial or other private documents, and classified information.

13.5.5. Where data from a discarded device is recovered, it may also result in a privacy or data breach - potentially incurring sanction from data regulators.

Electronic Waste (Waste Electrical and Electronic Equipment (WEEE))

13.5.6. Media and IT equipment can contain a number of elements such as arsenic, lead, mercury, barium, selenium and cadmium in their manufacture. These elements can be poisonous, carcinogenic or toxic in particulate or dust form. If allowed to accumulate in dumps or poorly managed recycling or disposal centres, they can create a serious health risk or environmental hazard.

13.5.7. Lead was traditionally used in solder on printed circuit boards, although it has been banned in many countries in the last decade. Lead oxide may still be found in cathode-ray tubes and older equipment. Lead is toxic to humans and medical research has raised concerns about the impact of low-level exposure on the development of the brain and central nervous system in children.

13.5.8. Other elements used in the manufacture of IT and electronic equipment may include flame retardants and plasticisers, and should be treated with caution.

13.5.9. Some flame-retardant materials used in computers can be toxic if released as dust into the atmosphere. Research has shown that they interfere with brain and skeletal development.

13.5.10. Phthalates are probably best known as plasticisers and are widely used in the electronics industry. One of the most widely used phthalates, DEHP, is classified by the EU as toxic to reproductive health. For example, in 1999 an EU-wide ban was imposed on the use of six phthalates in children's chewable toys.

Incinerators

13.5.11. There are many risks associated with the incineration of electronic waste. Up-to-date guidance is available on the Ministry for the Environment website (see reference table 13.5.21).

13.5.12. Incinerators discharge into the atmosphere and create emissions and ash residue. There is potential for contamination of air, soil and water through the release of pollutants such as hydrocarbons, heavy metals and dioxins.

13.5.13. There are two main by-products of incineration. Firstly, inert bottom ash which is primarily formed from inorganic elements, and secondly, flue gases. These facilities must include gas cleaning systems designed to contain pollutants and safely exhaust to the atmosphere. Properly designed,

installed and operated facilities will be able to manage and safely dispose of the waste, particulate matter and contaminants produced by incineration.

13.5.14. It is essential that any incineration facility is properly rated, inspected and authorised or licenced to process WEEE. Any relevant national environmental legislation and regulation must also be complied with. In particular the Resource Management Act and the National Environmental Standards for Air Quality must be observed.

13.5.15. Some electrical and electronic waste materials cannot be safely incinerated. This includes:

- Alkaline batteries;
- Glass;
- Lithium batteries; and
- Mobile phones.

Destruction

13.5.16. While sanitisation of media and IT equipment can be highly effective in controlled conditions and when applied for specific purposes, it does not provide the high level of assurances on the irrecoverably of data when the media and equipment has left the control of the owner, agency or other organisation.

13.5.17. Destruction provides considerably higher levels of assurance to agencies where non-recoverability of any agency data is a consideration. In many cases destruction is essential, rather than sanitisation and disposal.

13.5.18. The GCSB approves destruction facilities (see also 13.6.11). It is important to note that such approval is specific, confined to the destruction process and DOES NOT endorse or approve the use of any sanitisation process, method or software.

New Zealand Eyes Only (NZEO) Materials

13.5.19. NZEO endorsed material requires additional protection at every level of classification.

13.5.20. In general terms, media and IT Equipment containing NZEO material should be sanitised and redeployed or sanitised and destroyed in accordance with the procedures in this section. Media and IT Equipment that has contained NZEO material must not be disposed of, to e-recyclers or sold to any third party.

References

13.5.21. Further references can be found at:

Reference	Title	Publisher	Source
	Secure Destruction of Sensitive Items	CPNI	Protect sensitive information and assets from creation to verified destruction. | CPNI
	Proposed amendments to National Environmental Standards for Air Quality: Particulate matter and mercury emissions	Cabinet Paper June 2020	https://environment.govt.nz/publications/approval-to-release-discussion-document-proposed-amendments-to-national-environmental-standards-for-air-quality-particulate-matter-and-mercury-emissions/
		Consultation document February 2020	https://environment.govt.nz/publications/proposed-amendments-to-the-national-environmental-standards-for-air-quality-particulate-matter-and-mercury-emissions-consultation-document/
		Summary of submissions December 2020	https://environment.govt.nz/publications/proposed-amendments-to-the-national-environmental-standards-for-air-quality-summary-of-submissions/
	Guidelines and recommendations for WEEE reuse and recycling operators	Ministry for the Environment	https://environment.govt.nz/publications/waste-electrical-and-electronic-equipment-guidance-for-collection-reuse-and-recycling/guidelines-and-recommendations-for-weee-reuse-and-recycling-operators/
	Overview of other WEEE good practice guidance/advice and standards	Ministry for the Environment	https://environment.govt.nz/publications/waste-electrical-and-electronic-equipment-guidance-for-collection-reuse-and-recycling/overview-of-other-weee-good-practice-guidanceadvice-and-standards/
	Health and safety considerations when reusing or recycling WEEE	Ministry for the Environment	https://environment.govt.nz/publications/waste-electrical-and-electronic-equipment-guidance-for-collection-reuse-and-recycling/health-and-safety-considerations-when-reusing-or-recycling-weee/
	Hazardous Air Pollutants	Ministry for the Environment	https://environment.govt.nz/facts-and-science/air/air-pollutants/hazardous-air-pollutants-effects-health/
	New Zealand Waste list (L-Code)	Ministry for the Environment	https://www.mfe.govt.nz/waste/guidance-and-resources/waste-list
	Environmental Health Intelligence NZ – Air quality	Massey University	https://www.ehinz.ac.nz/indicators/air-quality/
	E-Waste Management	National Environmental Agency (US)	https://www.nea.gov.sg/our-services/waste-management/3r-programmes-and-resources/e-waste-management
	Hazardous Substances	National Environmental Agency (US)	https://www.nea.gov.sg/our-services/pollution-control/chemical-safety/hazardous-substances
	A-Z Topics and Industry	Worksafe NZ	https://www.worksafe.govt.nz/
	Stewart, E. S., & Lemieux, P. M. (2003, May). Emissions from the incineration of electronics industry waste. In IEEE International Symposium on Electronics and the Environment, 2003. (pp. 271-275). IEEE.	Stewart and Lemieux, Office of Research and Development, US EPA, 2003,IEEE	https://www.researchgate.net/publication/4020282_Emissions_from_the_incineration_of_electronics_industry_waste
	Gurgul, A., Szczepaniak, W., & Zabłocka-Malicka, M. (2017). Incineration, pyrolysis and gasification of electronic waste. In E3S Web of conferences (Vol. 22, p. 00060). EDP Sciences.	Gurgul et al, Wroclaw University of Science and Technology, Poland, 2017,	https://www.e3s-conferences.org/articles/e3sconf/pdf/2017/10/e3sconf_asee2017_00060.pdf [PDF, 519 KB]
	Black, H. (2005). Getting the lead out of electronics. Environews,113(10).	Harvey Black, published in Environmental Health Perspectives, 2005 Oct; 113(10): A682–A685,	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1281311
	EU bans baby toys containing phthalates. (1999). BMJ : British Medical Journal, 319(7224), 1522.	Xavier Bosch, The Lancet, Volume 354, Issue 9195, p2060, December 11, 1999,	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1174644/

Rationale & Controls

Destruction procedures

13.5.22.R.01. **Rationale**

Documenting procedures for media and IT equipment destruction will ensure that destruction is carried out in an appropriate, consistent and responsible manner within the agency.

13.5.22.C.01. **Control System Classifications(s): All Classifications; Compliance: Must [CID:4270]**

Agencies MUST document procedures for the destruction of media and IT Equipment.

Media and IT Equipment destruction

13.5.23.R.01. **Rationale**

The destruction methods given are designed to ensure that recovery of data is impossible or impractical. Health and safety training and the use of safety equipment may be required with these methods.

13.5.23.C.01. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4276]

To destroy media and IT Equipment agencies MUST use at least one of the methods shown in the following table.

Item	Destruction methods					
	Furnace/ Incinerator	Hammer mill	Disintegrator	Grinder/ Sander	Cutting	Degausser
Magnetic floppy disks	Yes	Yes	Yes	No	Yes	Yes
Magnetic hard disks	Yes	Yes	Yes	Yes	No	Yes
Magnetic tapes	Yes	Yes	Yes	No	Yes	Yes
Optical disks	Yes	Yes	Yes	Yes	Yes	No
Electrostatic memory devices	Yes	Yes	Yes	Yes	No	No
Semi-conductor memory	Yes	Yes	Yes	No	No	No
Other Circuit Boards	Yes	Yes	Yes	No	No	No

Destruction methods for media and IT equipment

13.5.24.R.01. **Rationale**

Where an agency does not perform its own destruction of media and IT equipment, an approved facility must be used. Agencies that do perform destruction of media and IT equipment must use equipment that complies with the NZISM.

13.5.24.R.02. **Rationale**

A variety of equipment for media and IT Equipment destruction exists. Evaluated products will provide assurance that the product will be effective. Approved products are discussed in Chapter 12 - Product Security.

13.5.24.R.03. **Rationale**

Where a product or service is not an evaluated product or is NOT listed in the PSR, agencies must consult the GCSB for advice.

13.5.24.R.04. **Rationale**

Equipment can be dismantled or pre-processed before disposal. Care MUST be taken to ensure safe handling of any potential poisonous, carcinogenic or toxic materials.

13.5.24.R.05. **Rationale**

Where incineration is the disposal method of choice, users must ensure the facility is properly rated for the incineration of electronic waste (WEEE) and the safe handling of any poisonous, carcinogenic and toxic materials produced in the incineration process. The facility must also be properly authorised or licenced to operate.

13.5.24.C.01. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4302]

Media and IT equipment destruction MUST be performed using approved destruction equipment, facilities and methods.

13.5.24.C.02. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4304]

Where agencies do not own their own destruction equipment, agencies MUST use an approved destruction facility for media and IT equipment destruction.

13.5.24.C.03. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:7165]

Where a facility is NOT an approved facility, agencies MUST ensure any incineration equipment is rated for the destruction of electronic waste (WEEE) and the operator is properly authorised or licensed.

13.5.24.C.04. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:7166]

Where a facility is NOT an approved facility, agencies MUST ensure processes are in place for the safe handling of electronic waste (WEEE), including any residual material from the destruction process.

Storage and handling of media and IT Equipment waste particles

13.5.25.R.01. **Rationale**

Following destruction, normal accounting and auditing procedures do not apply. As such, it is essential that when an item is recorded as being destroyed, destruction is assured.

13.5.25.C.01. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4343]

Agencies MUST, at minimum, store and handle the resulting waste for all methods, in accordance with the classification given in the table below.

Initial media or IT Equipment classification	Screen aperture size particles can pass through	
	Less than or equal to 3mm Treat as	Less than or equal to 6mm Treat as
TOP SECRET	UNCLASSIFIED	**RESTRICTED**
SECRET	UNCLASSIFIED	**RESTRICTED**
CONFIDENTIAL	UNCLASSIFIED	**RESTRICTED**
RESTRICTED	UNCLASSIFIED	UNCLASSIFIED

Particle size: measured in any direction, should not exceed stated measurement.

Degaussers

13.5.26.R.01. **Rationale**

Degaussers are effective ONLY on magnetic media or storage devices. Coercivity varies between media and IT Equipment types and between brands and models of the same type. Care is needed when determining the desired coercivity as a degausser of insufficient strength will not be effective. The National Security Agency/Central Security Service's EPLD contains a list of common types of media and their associated coercivity ratings.

13.5.26.R.02. **Rationale**

Since 2006 perpendicular magnetic media have become available. Some degaussers are only capable of sanitising longitudinal magnetic media. As such, care needs to be taken to ensure that a suitable degausser is used when sanitising perpendicular magnetic media.

13.5.26.R.03. **Rationale**

Some degaussers will have product specific requirements. Agencies will need to comply with any directions provided by the GCSB to ensure that degaussers are being used in the correct manner to achieve an effective destruction outcome. Refer also to Chapter 12 - Product Security.

13.5.26.C.01. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4349]

Agencies MUST use a degausser of sufficient field strength for the coercivity of the media and IT Equipment.

13.5.26.C.02. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4350]

Agencies MUST use a degausser which has been evaluated as capable for the magnetic orientation (longitudinal or perpendicular) of the media.

13.5.26.C.03. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4352]

Agencies MUST comply with product specific directions provided by the manufacturers, along with any provided by the GCSB.

Supervision of destruction

13.5.27.R.01. **Rationale**

To ensure that classified media and IT Equipment is appropriately destroyed it will need to be supervised to the point of destruction and have its destruction overseen by at least one person cleared to the highest classification of the media being destroyed. To provide accountability and traceability, a destruction register is essential.

13.5.27.C.01. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4357]

Agencies MUST perform the destruction of media and IT Equipment under the supervision of at least one person cleared to the highest classification of the media or IT Equipment being destroyed.

13.5.27.C.02. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4358]

Personnel supervising the destruction of media or IT Equipment MUST:

- supervise the handling of the media or IT Equipment to the point of destruction; and
- ensure that the destruction is completed successfully.

13.5.27.C.03. **Control System Classifications(s): All Classifications; Compliance: Should** [CID:4359]

The Destruction Register SHOULD record:

- Destruction facility used;
- Destruction method used;
- Date of destruction;
- Operator and witnesses;
- Media and IT equipment classification; and
- Media and IT equipment type, characteristics and serial number.

Supervision of accountable material destruction

13.5.28.R.01. **Rationale**

As accountable material is more sensitive than standard classified media and IT equipment, it needs to be supervised by at least two personnel and have a destruction certificate signed by both personnel supervising the process. This includes any NZEO material.

13.5.28.C.01. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4363]

Agencies MUST perform the destruction of accountable material under the supervision of at least two personnel cleared to the highest classification of the media or IT Equipment being destroyed.

13.5.28.C.02. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4364]

Personnel supervising the destruction of accountable media and IT Equipment MUST:

- supervise the handling of the material to the point of destruction;
- ensure that the destruction is completed successfully;
- sign a destruction certificate; and
- complete the relevant entries in the destruction register.

Outsourcing media and IT Equipment destruction

13.5.29.R.01. **Rationale**

Agencies may wish to outsource media and IT Equipment destruction for efficiency and cost reasons.

13.5.29.C.01. **Control System Classifications(s): Top Secret; Compliance: Must Not** [CID:4367]

Agencies MUST NOT outsource the supervision and oversight of the destruction of TOP SECRET or NZEO media and IT equipment or other accountable material to a non-government entity or organisation.

13.5.29.C.02. **Control System Classifications(s): All Classifications; Compliance: Must** [CID:4368]

Agencies outsourcing the destruction of media and IT Equipment to a commercial facility MUST use an approved facility and comply with the procedures and instructions in this Chapter.

Transporting media and IT Equipment for offsite destruction

13.5.30.R.01. **Rationale**

Requirements on the safe handling and physical transfer of media and IT Equipment between agencies or to commercial facilities can be found in the PSR.

13.5.30.C.01. **Control System Classifications(s): All Classifications; Compliance: Should** [CID:4371]

Agencies SHOULD sanitise media and IT Equipment prior to transporting it to an offsite location for destruction.