Appropriate measures guidance	Operator response
Appropriate measures for waste pre-acceptance	
Written procedures should be in place for ensuring that adequate information (including samples where necessary) is obtained from waste producers to allow the Operator to determine the suitability of a waste for onsite storage and treatment before arrangements are made for its acceptance.	Procedure in place for screening incoming loads and an SOP for N_2O processing. The cylinders are not suitable for sampling.
The technical capability of a facility should be pre-determined in terms of the nature and quantities of canisters that can be handled and the condition in which they must arrive.	Storage limits are in place for all waste types as part of existing procedures. Contractual controls on waste condition and non conformance procedures are in place.
A system should be in place to inform customers and site operatives of the type of canister(s) that the facility is permitted to accept for storage and/or treatment, specifically considering the chemical content, compatibility and quantity of residual materials.	A site storage plan is in place. The weighbridge system is pre-programmed with a list of acceptable waste codes.
For bulk loads of waste canisters received from canister manufacturers and retailers, the Operator should obtain the following information in writing from the customer: ° quantity of waste being delivered ° the contents of canisters, including named product and propellant ° whether the canisters are fully discharged, partially discharged or unused ° hazard properties posed by contents of canisters (i.e. from MSDS) ° construction material of canisters (e.g. steel, aluminium or mixed)	Waste inquiry forms are in place, all waste inputs are technically assessed.
For mixed loads of canisters, the Operator should obtain the following information in writing from the customer as a minimum: ° quantity of waste being delivered ° construction material of canisters (e.g. steel, aluminium or mixed) If not obtained from the customer, the condition, content and hazard properties posed by the contents of the canister should be determined and acceptability for on-site storage for treatment or transfer confirmed by the Operator as a priority once the load has arrived onsite.	N_2O canisters are received as a single stream.

Using the information received from the customer (as detailed in 3.1.4), a technical assessment must be made of the waste's suitability for storage and treatment to ensure that Permit conditions are met.	All waste inputs are technically assessed, procedures are in place as part of existing operations.
The Operator should instruct the customer on requirements regarding the type and condition of containers and packaging that canisters will be accepted in. Requirements for the on-site storage of canisters are detailed in Section 4 of this guidance. Requirements for the transport of canisters are detailed in the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (CDG) and The European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR).	Agreements are in place with customers as appropriate.
Wastes should not be accepted at the facility without a clear method of treatment (if treated on site) or a defined disposal route (if stored on site pending transfer) being determined in advance and costed.	N_2O canisters have a clear method of treatment.
There must be a clear distinction between sales and technical staff roles and responsibilities. If non-technical sales staff are involved in waste disposal enquiries, then a final technical assessment prior to approval should be made to confirm that the waste is suitable for storage and treatment on site and to avoid build-up of accumulations of wastes.	Material sales teams and technical assessors are separate roles within the business.
All records relating to pre-acceptance should be maintained at the facility for cross-reference and verification at the waste acceptance stage. These records should be kept for a minimum of 3 years.	Compliant document retention process in place as part of existing operation.
Appropriate measures for waste acceptance	
The Operator should have clear and unambiguous criteria for the acceptance and rejection of waste, along with written procedures for the reception, inspection, acceptance, non-conformance, and rejection of waste received at the facility. Procedures for the non-conformance and rejection of waste canisters should be in accordance with indicative BAT requirement 34 of Section 2.1.2 of SGN 5.06 and should take into account the requirements of CDR for the carriage of waste dangerous goods.	SOP in place for the N_2O process including acceptance and rejection as part of existing site procedures.
Upon arrival at the facility, the quantity of waste canisters received should be confirmed (based upon weight and/or number as appropriate) and accompanying documentation checked to ensure that the load is as expected and that the site has sufficient storage capacity to take it.	Carried out as part of pre-booking and waste acceptance checks.

Following completion of the initial checks, the waste should be directed to a designated waste reception area where it can be unloaded for visual inspection. The reception area should be well ventilated and covered, and have an impervious surface and a sealed drainage system.	Waste checks are carried out in a ventilated, covered area with impermeable surface and sealed drainage system.
The waste should not be directed to the reception area and offloaded without further assessment if, upon arrival, the accompanying documents are found to be inconsistent with the waste expected or, based upon the documents, there are concerns regarding the nature or quantity of the waste.	Procedures in place for identification and rejection of non conforming waste. Weighbridge checks in place including paperwork checks and systems coded to only accept specified EWC.
Wastes should not be directed to the reception area if it does not have adequate space for its safe and secure storage.	SOP in place for movement and storage of waste.
If waste canisters are received in containers that are not secure for on-site storage and well ventilated , based upon an appropriate risk assessment (e.g. taking into account the nature and quantity of the waste, the design and condition of the containers and available site storage provisions), the canisters should either be prioritised for subsequent acceptance checks and transferred to a secure well ventilated container or held in a secure caged storage area as soon as they are accepted on to the site, or rejected in accordance with the facility's waste rejection procedures.	Waste not appropriately stored could be dealt with off site by chempak engineers. Waste received on site in non suitable containers would be prioritised for transfer to a suitable area / container before being stored.
Once offloaded in the waste reception area, the waste should be subject to the following detailed visual checks: ° Check the waste to ensure that it is as expected, complies with the site's waste acceptance criteria and is consistent with accompanying paper work and the site's Permit. ° Check the condition of the containers in which the canisters have been packaged, in order to identify any that are damaged or unsuitable for handling and storage. ° Inspect the load to identify leaking canisters and potentially explosive accumulations of gas, for example by visual inspection and/or using a suitable portable flammable gas detector. ° Check the labelling of the containers in which the canisters have been packaged to ensure that it accurately identifies and describes the waste, removing any labels that do not relate to the waste. ° The Operator should label each container that holds waste canisters with a unique reference number from the site's waste tracking system, the date of arrival and relevant hazard classification(s).	Appropriate elements present within the existing waste acceptance procedure.
Unidentified wastes received at the facility (i.e. canisters without legible labels and with unknown content) should not be accepted unless information is obtained confirming that the waste canisters can be safely stored and, where relevant, treated on-site (i.e. based upon the content of	SOP in place for handling unidentified waste. Overpack unit available on site.

the canisters and the hazard properties posed).	
Following visual inspection, should the load fail the acceptance criteria, for example if it contains waste that the facility is not permitted to accept, these wastes should be immediately moved to a dedicated quarantine area and dealt with in an appropriate and timely manner. Unless the facility is permitted for the storage and subsequent transfer of the waste, the maximum storage time for waste that has failed the acceptance criteria should be no greater than 5 working days.	Appropriate elements present within the existing waste acceptance procedure.
Should the load be found to contain leaking canisters, these wastes should be immediately removed from the waste reception area, stored in a well ventilated area (e.g. to the open air or an area provided with adequate local exhaust ventilation) and away from any sources of ignition so gases can be safely dispersed and prioritised for treatment if suitable equipment is available on site. Where suitable equipment is not available, the aerosols should not be transported unless they are repackaged for transfer using UN approved salvage packaging provided with appropriate measures to prevent the dangerous build up of pressure, or until the leaking has ceased or slowed sufficiently to present no threat of a flammable atmosphere being generated during transport.	SOP in place for handling leak.
Once a load has passed the acceptance checks detailed above it should be moved promptly to a designated storage area. Requirements for the on-site storage of canisters are detailed in Section 4.	There is a designated storage area for N_2O canisters.
Records of all the information generated during waste pre-acceptance, acceptance, storage, treatment and/or removal off-site should be made and held in accordance with indicative BAT requirements 35 to 38 (inclusive) of Section 2.1.2 of SGN 5.06.	Compliant document retention process in place as part of existing operation.
Appropriate measures for waste storage	
Storage containers	
Storage of canisters must take place under cover in secure well ventilated containers or within caged storage areas (see 3.2.6 for definition of a secure and well ventilated container), in a well vented location which is not subject to extreme temperatures or direct sunlight. Good and bad examples of containers used to store canisters on-site are shown in Figure 2.	Canisters are stored under cover in ventilated plastic containers (battery boxes / drums) in a vented location.
Canisters received and held in insecure or flammable containers/packaging (e.g. in cardboard boxes, shrink-wrapped on pallets) must be stored in cages or transferred to secure ventilated	Waste received on site in non suitable containers would be prioritised for transfer to a suitable area /

containers to prevent the risk of them spreading fires by ‘missiling’ or ‘ejection’.	container before being stored.
Canisters held in containers that are not able to collect and hold liquids released from the canisters should be provided with suitable containment measures (e.g. drip trays) or transferred to secure containers that are able to retain free liquid.	No risk of liquid accumulation from N_2O cylinders.
During storage, lids on containers holding canisters should remain securely closed at all times when not being filled, emptied or internally inspected and the doors/hatches of cages should remain closed and locked when not being used.	Containers remain closed unless cylinders are actively being processed.
Containers used to store canisters should not be over-filled. Over filling can result in canisters being actuated and discharging their contents, either under the weight of the canisters above them, when the container lid is closed or when containers are stacked.	Containers are not overfilled (drivers will not collect overfilled containers). Minimal risk of activation for N_2O cylinder types. No transfer between containers for this type of waste.
Cages used for storage should be robust, fire-resistant and of an appropriate mesh size (based upon the size of the canisters to be stored) to constrain the canisters and prevent any ejection. Where the cage is not constructed with a mesh roof, the mesh wall panels should extend into the roof space of the storage area to ensure that the structure is completely enclosed.	Metal cages are not used for storage of N_2O cylinders because metal battery boxes are suitable / appropriate. The storage building is dedicated to N_2O storage.
Containers and tanks holding materials collected from the treatment process should be compatible with the materials held, fully earthed, UN tested and integrally sound, and designed and constructed to prevent the release of fugitive emissions to air (including odour) and ground, whilst allowing for emergency venting where necessary. Containers that can not be enclosed (e.g. skips containing recovered metal which are open to allow for ventilation and drying), should be stored in well ventilated covered storage areas to prevent the collection (and potential contamination) of rainwater and the corrosion/deterioration of the materials held.	No material collected from the treatment process other than empty containers. These are de-valved, stored internally and sent for recycling.
Flammable liquids should not be collected or held in plastic drums or nonconductive plastic IBCs. Containers used to collect and hold flammable liquids from the treatment process should preferably be constructed from steel, or at least anti-static plastic, and designed so that they can be sealed for handling/storage purposes. Anti-static plastic containers and IBCs should only be used to collect and hold flammable liquids if they are held within a self-contained bund and segregated from other dangerous substances (e.g. other flammable materials, oxidisers or corrosive materials).	No flammable liquids involved in the process.
Infrastructure	

Segregated storage and the use of appropriate separation distances and/or suitable engineering measures between containers holding incompatible substances is necessary to prevent incidents and as a means of preventing escalation should an incident occur (see HSG 51 for guidance on separation of flammable materials).	Storage area dedicated to one waste type.
Canisters should always be segregated from other flammable wastes and potential sources of ignition, preferably in a separate building, or by the use of a fire-resistant enclosure or fire wall.	N_2O cylinders stored in a separate building.
No combustible material should be held within the storage area, other than the canister's packaging, containers and wooden pallets on which they stand.	No other combustible material is held in the same storage area.
Storage areas should be provided with signs, which clearly display the hazard properties of the wastes that can be stored in them.	Appropriate signage in place.
Where safe to do so (i.e. taking into account the potential risk of flammable atmosphere formation), storage areas should be provided with a bunded/kerbed impervious surface and sealed drainage systems.	Material stored in a bunded area / building.
Packaging (cardboard etc) removed from the waste should be removed and stored under cover to avoid degradation and enhance its re-use/recovery.	Incoming waste is not packaged in card.
Ignition sources and fire suppression	
Areas of the site where explosive atmospheres could occur (e.g. aerosol storage, sorting and processing areas) should be assessed and, where appropriate, classified into hazardous zones, in accordance with the requirements of DSEAR. Zoned areas of the site should be provided with warning signs, which identify the zone classification and prohibited activities (e.g. smoking, the use of naked flames or other heat sources and hot work (e.g. shrink wrapping guns, gas and oil heaters), and the use of electrical equipment (e.g. mobile phones, cameras, battery charging) and only equipment suitable for operation in the identified hazardous zones should be used. For further guidance on hazardous area classification see the DSEAR Approved Code of Practice (ACoP) and Guidance Series Documents and HSG71.	N_2O is not a flammable gas, the site is subject to a DSEAR risk assessment which is regularly reviewed.
Canisters often contain gases that are denser than air, such as propane and butane, which can accumulate in low lying areas and form a potentially explosive atmosphere. In order to prevent the potential accumulation of these flammable gases, canisters should not be stored in or adjacent to basements, sumps or similar sunken areas. The design of the site drainage system and other containment measures (e.g. site bunding and kerbing) should also take account of this	N_2O monitors are installed in the cylinder processing area.

risk (e.g. where possible, avoid locating open drains or drainage channels in close proximity to stored canisters).	
Appropriate precautions should be taken in the storage and handling of canisters to prevent accidental damage due to crushing, falling or impact.	SOP in place for waste storage. Storage boxes stacked with lids maximum of two high.
Powered vehicles must not be used to move damaged stock (i.e. canisters that are leaking or suspected of leaking), unless they are specially adapted for use in flammable atmospheres.	Damaged cylinders would be overpacked prior to moving.
The route to the open air from the storage area should be as short and direct as possible, avoiding areas where gas may collect and sources of ignition.	Cylinders are processed in batches, there is approximately 100m from storage to processing areas.
In order to prevent the risk of a thermite spark during storage and handling activities, wherever possible and practical to do so, aluminium canisters should be stored separately from steel canisters that are rusty or in poor condition and should not be stored in direct contact with unprotected or rusty steel containers.	Nitrous canisters are of steel construction. SOP in place sitewide to exclude mixing of aluminium and steel containers.
The canister reception and storage areas should be provided with appropriate fire detection and fire extinguisher systems. Fire fighting precautions should be chosen based upon the quantity and nature of the content of the canisters stored on site and agreed in consultation with the Fire Service or the Health and Safety Executive.	Fire detection system in place including flammable gas detection. Fire extinguishers in place within the storage and processing areas.
Inspection	
The Operator should implement written inspection procedures to assess the condition of all waste containers (e.g. tanks, drums, IBCs and skips), pipework, bunding / kerbing and surfacing, and to carryout prompt remedial action where required or take unsuitable equipment out of use.	PPM process in place site wide.
Canisters should be regularly inspected on a frequent basis, for example by visual inspection and/or using a suitable flammable gas detector. Leaking canisters should be immediately removed from the storage area to the open air or an area provided with adequate local exhaust ventilation and away from any sources of ignition so gases can be safely dispersed. The canisters should be prioritised for treatment (if suitable equipment is available on site) or, if necessary, repackaged for transfer using UN approved salvage packaging.	Daily checks of the storage areas are completed. Flammable gas detectors are present in the processing area. There are no flammable gases in the storage area which is dedicated to N_2O.
Canisters affected by rusting or damage from impact should be identified and prioritised for treatment.	Damaged compromised canisters would be prioritised for treatment.

An auditable waste booking and tracking system should be in place in order to avoid the accumulation and storage of aged stock. Canisters should not be held on site for a period longer than 3 months, prior to treatment or transfer.	A full waste inventory and tracking system is in place.
Appropriate measures for the design and operation of the treatment process	
Process design and infrastructure	
The treatment process should be fit for purpose and specifically designed for the treatment of canisters and the recovery of their materials and residues whilst managing potentially flammable substances and preventing explosive atmospheres.	The Medclaire equipment is specifically designed for treatment of N_2O cylinders and has been tested in medical and industrial settings.
The treatment process should be designed and operated (e.g. in terms of waste feed rate, duration of treatment cycle and gas/liquid extraction) to ensure that the residual contents of the canisters are fully discharged and removed in a safe and efficient manner.	The design and monitoring of the equipment ensures gasses are fully discharged.
The treatment plant should be located in a designated covered area or ventilated building, provided with impervious surfaces and sealed drainage systems, and located with suitable separation from stored combustible materials, other sources of ignition and sensitive receptors. The treatment area should be designed in order to avoid the potential accumulation of flammable gases that are heavier than air, for example in sumps or similar sunken areas.	Treatment occurs within a designated ventilated building on site with impervious surface and sealed drainage already being used for the same process.
The treatment process should be carried out in an enclosed and sealed system provided with means to contain or control an explosion. The plant should be strong enough to contain an explosion (typically up to 10 bar overpressure) or should have explosion relief directed to a safe space or explosion suppression fitted. Explosion relief provisions must satisfy the requirements of relevant Health & Safety legislation.	N/A, no risk of explosion.
The Operator should ensure that all canisters have been checked and sorted (having regards to relevant COSHH implications before being fed into the treatment process to ensure untreatable wastes (e.g. foams) are excluded.	N_2O canisters readily identifiable, any non conforming items are removed to quarantine.
Wherever possible and practical to do so, batches of aluminium and steel cans should be processed separately in order to enhance subsequent recycling of the metals recovered from the treatment process.	N_2O canisters are typically steel.
In order to maintain the operating efficiency of the treatment system and prevent the	The treatment process is batch allowing for ready

accumulation of waste in the treatment area (i.e. of waste that requires sorting, is ready for treatment or has been removed from the treatment stream) the Operator should keep the waste sorting process distinct and separate from the treatment process itself.	separation of sorting ant treatment activities.
To prevent damage to canisters and spillage/fugitive release of recovered residues and materials, the facility should be designed to minimise doublehandling for treatment and subsequent storage.	The process has been designed to avoid double handling where practicable.
For safety considerations and to prevent the accumulation of wastes on site, the Operator should ensure that reliable recovery or disposal routes are identified and available, and where necessary contracts are in place, for taking the residues/materials recovered from the treatment process and any canisters that have been accepted but can not be treated on site.	Contents are gaseous and there are no residues produced by the treatment process. Outlets are readily available for recycling of the metal cylinders.
The Operator should ensure that as a minimum all LPG piping systems comply with UKLPG Code of Practice 2212 and are securely sealed, tested and have a procedure in place for their regular inspection.	Not applicable.
Before being stored and sent for recycling, residues remaining on the recovered metals should be collected or allowed to dry.	Not applicable, the content of the cylinders is a gas.
The Operator should consider the need for noise and vibration control measures, having regard to the control practices detailed in IPPC H3 Horizontal Guidance for Noise, Part 2 – Noise Assessment and Control.	The technology provider has assessed the noise from the plant as very low. This is confirmed by existing operations.
Systems should be in place to ensure that the following are available at all times and remain effective and up-to-date: • process diagrams and plans, with DSEAR hazardous zone areas clearly marked out, • environmental risk assessment, • design specification, • treatable wastes and exclusions, • control system philosophy, • venting and emergency relief systems, • operating and maintenance procedures, • protection during abnormal operations, • COSHH risk assessments.	Records for the design and installation of the plant as well as associated risk assessments will be retained as appropriate.
Accident prevention	
Site specific risk assessments should be undertaken for the treatment area and associated treatment activities. This will include carrying out a full DSEAR risk assessment to identify and	DSEAR risk assessment in place and reviewed every year or if there is a change in process.

assess areas of the site where flammable gases and liquids are present, activities involving those substances, how they may give rise to risk of fire or explosion, implement measures to eliminate, control or mitigate potential risks to the safety of workers and, if necessary, classify potentially harmful areas of the site into hazardous zones (see DSEAR ACoP and guidance series documents referred to in Section 9). The risk assessments should also cover the potential for adverse chemical reactions occurring between different aerosol contents, the potential for thermite reactions (sparks) between metals (i.e. aluminium canisters and rusty steel) and build-up of static electricity.	
Treatment buildings should be provided with sufficient ventilation both during operation and non-operation periods, for example by providing permanent openings in external walls and roof vents. Large buildings or building where the internal structure prevents clear airflow may require extractive ventilation, which should be interlocked with plant operation, so that the plant cannot operate unless the ventilation system is working, but should also be capable of being turned off in an emergency i.e. in the event of a fire.	Storage building is suitable for proposed waste types with detection systems in place for leaks. Emergency plan in place.
The treatment process (tipping/loading, shredding, compaction etc) should take place within a controlled inert atmosphere, for example using gas extraction and nitrogen gas injection to displace air from the plant and to purge it before and following a treatment cycle. Plant operation should automatically cease on failure of the inerting system or high oxygen levels. Similarly, where ventilation is used to prevent the formation of an explosive atmosphere equipment operation should automatically cease when the LEL13 is approached.	No inerting system required for processing N_2O cylinders.
The treatment plant should be shielded in order to prevent the loss of any canisters without compromising the areas emergency escape routes or ventilation. Where possible, the operation of the treatment process (e.g. waste loading, piercing and unloading activities) should be automated, rather than manual, so that operators do not need to be in close proximity to the machine during operation.	Shielding is present where necessary. The processing is automated following loading of the cylinders.
The Operator should ensure that the compatibility of collected liquids is assessed and confirmed before treating canisters that contain different products or mixing liquids that were collected from different batches of canisters.	Not applicable, there are no liquids generated from the process.
Containers used to hold liquids or metal collected from the processed canisters should be checked and cleaned periodically to prevent build-up of flammable residues.	Not applicable, there are no liquids generated from the process.
The Operator must ensure that the treatment plant and associated equipment is cleaned/purged of residual materials between batches or loads of waste where it is assessed that	Not applicable, the equipment is for a single stream of waste.

cross-contamination of the collected residues and treated waste materials could impede their subsequent recovery or disposal or pose potential chemical incompatibilities or other health and safety risks.	
The design and construction of the system used to collect liquids released from the canisters during the treatment process should be appropriate to their hazardous properties to ensure that they can be safely collected, contained and transferred.	Not applicable, there are no liquids generated from the process.
Volatile gases are likely to be released from the liquid residues collected from the treated canisters. The treatment process should be designed and operated in a way that maximises the collection and recovery of these gases or, where this is not possible, minimises their release as a fugitive emission to air without giving rise to the creation of potentially flammable atmospheres.	Not applicable, there are no liquids generated from the process.
Electrostatic charges may develop on containers holding non-aqueous liquids and the liquid component collected from treated canisters may be flammable and give off flammable vapours. To prevent the risk of fire, the Operator should ensure that only earthed metal (i.e. steel) or anti-static containers are used for holding flammable liquids. Non-conductive plastic and composite metal-clad IBCs should not be used for this purpose. Pipework used to transfer flammable liquids should also be earthed or made from an anti-static material. All equipment that has the potential to develop an electro-static charge should be earthed and effectively grounded and the effectiveness of systems to safely dissipate electrostatic charge should be maintained and inspected on a regular basis (at least annually or after any event that may negate its effectiveness).	Not applicable, there are no liquids generated from the process.
The treatment process and treatment area / building should be provided with an appropriate automatic smoke and fire detection, alarm and extinguishing system; linked to automatic plant shut-down where possible.	Detection / alarm system for flammable gasses and N_2O. The processing equipment automatically shuts down on detection of a fault.
Management	
A written operating procedure/code of good practice should be drawn up, and all site operatives trained to follow it. A good standard of supervision should be maintained throughout.	SOP in place for N_2O treatment process.
Adequate and suitable training should be provided for all persons working the treatment process to ensure they are familiar with, and understand, the precautions that must be taken and the emergency procedures to be followed in case of a fire or other incident.	Training matrix in place for all staff working on site and within the process.
A high standard of housekeeping should be maintained to prevent the accumulation of	Housekeeping procedures in place as part of existing

combustible material beneath or around the treatment equipment.	operations.
Monitoring	
The treatment process should be subject to a programme of continuous monitoring to ensure that it is operating safely and efficiently. Process monitoring parameters may include parameters such as nitrogen gas levels, internal gas pressure/vacuum, oxygen concentration, lower explosion limit (LEL), motor load, air flow etc.	The destruction process is fully automated, with an in-built control system that monitors and controls the process. The unit has an integrated control system that continuously monitors several parameters, including temperature and gas flows. If an issue occurs, the unit will automatically shut down for example if the catalytic process has exceeded its maximum allowed temperature (in this case the RDU will shut down the process completely until the temperature falls below the limit). The unit is always connected to the internet to enable remote support and analysis and diagnostics for potential issues with the unit. This connection can only be accessed by authorised service personnel. The IR sensor is measuring N_2O concentration (ppm) in the outlet gas. An average value is calculated with 5 minute intervals and alarm is given in two levels if a decrease of conversion is detected.
Where abatement is used, the efficiency and effectiveness of this should be assessed. If activated carbon is being used for abatement, then the effectiveness of the carbon filter should be checked on a regular basis and changed as necessary.	
The Operator should have a procedure in place for the regular inspection and maintenance of the treatment plant and associated containers, tanks, pipework and connections, underground structures (sumps), kerbing/bunding and hardstanding.	The system will be under maintenance contract with the supplier which will include regeneration of the catalyst to ensure effective operation.
Point source emissions to air	
The canister processing plant should be fully enclosed and fitted with an appropriate gas extraction system, subject to conditions 6.1.2, 6.1.3, 6.1.4 and 6.1.5 below. The gas extraction system should be interlocked with plant operation, so that the plant cannot operate unless the system is working.	The N_2O treatment units are enclosed and include a gas extraction system.
Wastes containing banned substances and medicines must only be processed in plant that can capture all such materials when released from the canisters by the treatment process.	The system is designed specifically for N_2O treatment
For new facilities and plant upgrades at existing facilities, the Operator will be expected to design	The system treats N_2O with >96% efficiency releasing

and operate the treatment process in order to collect and recover all gases released from the canisters and prevent point-source emissions to air, other than non-hydrocarbon/non-volatile canister gases such as nitrogen, carbon dioxide and nitrogen purge gases (see Section 5.1 for further guidance regarding the assessment of candidate techniques).	only molecular nitrogen and oxygen.
For existing facilities where it is demonstrated that it is not technically or economically viable to collect and recover all canister gases (subject to 6.1.2 above and the requirements of the waste hierarchy), appropriate measures should be taken that aim first to prevent emissions and then to minimise emissions at source, without compromising the safe operation of the facility. Emissions to air (other than system purge gases and non-hydrocarbon/nonvolatile canister gases such as nitrogen, carbon dioxide) should then be characterised and assessed in accordance with Horizontal Guidance Note H1 – Environmental Risk Assessment for Permits in order to assess the need for abatement. Abatement options should be considered for emissions that are not assessed as being insignificant.	The system results in almost complete destruction of N_2O to molecular nitrogen and oxygen. The impact from N_2O is principally due to its global warming potential which is not regulated by the Environment Agency with numerical limits.
Where abatement is required, the Operator should review the available abatement options (taking into account their technical feasibility and economic viability) to ensure that the chosen option provides the most effective means of reducing the emission and the impact on the environment as a whole, through the consideration of additional factors including the waste hierarchy, energy efficiency and raw material use. Abatement should not rely upon the dilution of the gases in order to achieve an acceptable concentration. Detailed information on the control of emissions of volatile organic compounds (VOCs) is available in Environment Agency guidance document EPR4.02 Speciality organic chemicals sector and Technical Guidance Note (Abatement) A2, Pollution abatement technology for the reduction of solvent vapour emissions.	The system operates using a catalytic destruction system which has been thoroughly tested and proved in medical and industrial settings including existing use on the subject site.
Over time an abatement system can become overloaded and ineffective, therefore it should be correctly operated, monitored and maintained to ensure that it continues to reduce emission concentrations to an acceptable level. The additional costs required for monitoring and maintaining/renewing an abatement system should be considered during the design of the treatment system.	The system will be under maintenance contract with the supplier which will include regeneration of the catalyst to ensure effective operation. The system monitors N_2O and will alarm if there is a set reduction in efficiency.
Extractive ventilation exhausts from buildings should be provided with suitable abatement unless emissions (including odour) are assessed as being insignificant.	No abatement systems will be required for molecular nitrogen and oxygen emissions.
Point source emissions to water	
The Operator should have appropriate measures in place for the collection and discharge of	There are no water emissions from the process.

uncontaminated water, including measures to protect it from potential sources of contamination and to prevent its discharge from the site should it be contaminated (i.e. provision of inspection/sampling procedures and infrastructure such as oil interceptors and pen-stock valves prior to discharge).	
Unless it can be re-used on site, drainage water from the site should be directed to sewer (under the requirements of a discharge consent obtained from the relevant sewage undertaker) or sent to an appropriate waste facility for treatment prior to discharge.	There are no water emissions from the process.
In order to minimise potential emissions to water, the Operator should undertake measures to minimise water use, in accordance with the requirements of Section 2.4.3 of SGN 5.06.	There are no water emissions from the process.
Fugitive emissions to air and odour	
A procedure should be in place for carrying out a regular programme of inspection and maintenance for all containers, drums, tanks, above-ground pipework and connections, and the treatment plant/equipment itself, including seals, pipework, integral tanks, compartments and monitoring devices, with the aim of preventing (detecting and mitigating) fugitive emissions and the potential build-up of flammable atmospheres.	The system will be under maintenance contract with the supplier.
Where safe and practical to do so, the Operator should use closed/sealed systems for transporting and handling the residues collected from the treated canisters (e.g. covered chutes, conveyors and containers and sealed connections between pipework and containers).	The N_2O treatment units are enclosed and include a gas extraction system. The system monitors N_2O and will alarm if there is a set reduction in efficiency.
At facilities where odour may be an issue (potential cause of nuisance to local receptors), the Operator should review odour management measures against the recommended practices identified in IPPC H4 Horizontal Guidance for Odour, Part 2- Assessment and Control.	There are no odour emissions from the process.
Fugitive emissions to water, sewer, groundwater	
The Operator should ensure that all subsurface structures (e.g. sumps, drains and pipework), surfacing and above-ground tanks are designed, constructed, inspected and maintained in line with the requirements of Section 2.2.5 of SGN 5.06.	There are no water emissions from the process.
The storage (of canisters and collected materials and residues) and treatment of canisters should take place in areas of the site that are: • Covered, whilst ensuring adequate ventilation, and • Contained, i.e. provided with impermeable hardstanding and contained drainage, and	There are no water emissions from the process.

bunded/kerbed where safe to do so (in terms of preventing the build-up of flammable atmospheres).	
Drain covers at the site should be colour-coded, i.e. different colours used to demarcate drains that discharge to surface water, foul sewer and contained drainage.	There are no water emissions from the process.
The Operator's Environmental Management System should include a preventative maintenance program, competence and training systems and accident plans and procedures that satisfy the requirements detailed in Section 2.3 (specifically Indicative BAT Requirements 1 to 11) of SGN 5.06 in order to prevent and mitigate accidents that could result in fugitive emissions to ground.	There are no water emissions from the process.
Appropriate measures for process efficiency	
Energy efficiency	
The Operator should ensure that the facility is designed and operated in accordance with the energy efficiency requirements detailed in Section 2.7 of SGN 5.06 and shall have regard to the energy efficiency measures detailed in Horizontal Guidance Note H2, Energy Efficiency15, specifically Appendix 2.	Medclair has developed a unique technology for heat exchanging and isolation of the RDU 3X, which recovers the input energy and minimises the energy consumption. The solution is based upon a high degree of energy recovery, few moving parts and a stable and reliable catalytic process.
In terms of potential techniques for energy recovery, at facilities that recover the gases released from the processed canisters, it may be possible to utilise the collected gas on site.	Not currently being explored for this process.
The treatment plant should be subject to a programme of regular inspection and maintenance to ensure that it continues to operate efficiently.	The system will be under maintenance contract with the technology provider.
Raw materials	
The Operator should ensure that the general requirements detailed in Section 2.4 of SGN 5.06 are met during the design and operation of the facility.	No raw material use other than catalyst regeneration.
Nitrogen gas is likely to be a raw material used in a waste canister treatment plant, i.e. used in an inerting system. An enclosed/sealed treatment system will reduce the quantity of nitrogen gas required to provide an inert atmosphere compared to an unsealed system that relies upon the continuous extraction and ventilation of gas during the treatment process.	N/A

Appropriate measures for accident management	
The Operator should develop and implement an accident management plan for the facility, which satisfies the requirements detailed in Section 2.8 of SGN 5.06. The accident management plan should specifically consider foreseeable impacts of fire on aerosol cans stored at the facility, along with any other waste held on site, to receptors both on and off site. This should include foreseeable impacts resulting from the rocketing of aerosol cans and failure of containers (e.g. IBCs and drums) in the event of a fire. Measures should be adopted on site to prevent such impacts and minimise their consequences.	Emergency plan / BCP and a major accident prevention policy (MAPP).
The Operator should produce emergency plans for the potential accidents identified and assessed by the facility's accident management plan. Emergency plans should provide information on the layout of premises, type, quantity and hazards of materials onsite, location and type of fire fighting equipment, the name of contacts in case of emergency and, where possible, be drawn up in consultation with the local fire service.	Emergency plan in place.
Procedures and training should be in place to manage identified risks and ensure the rapid initiation of the emergency plan should an accident occur.	Training matrix in place for all staff.
Where possible, the Operator should involve the emergency services in relevant emergency training activities.	The site is not on the COMAH register.
The accident management plan, and associated emergency plans and risk assessments, should be regularly reviewed and kept up to date, to reflect any changes on site, in terms of waste received, equipment installed/removed, changes in personnel, changes in regulations, and incidents/near-misses.	Emergency plan reviewed annually or if there is a change in process.
Physical protection measures should be used at the facility, e.g. bollards and barriers, to protect storage areas and above ground pipework from vehicle and people movements.	Physical protection infrastructure in place sitewide.
The site should have security (e.g. fencing, a single manned entrance) that is adequate to guard against intruders on to the site to prevent the threat of malicious activity. Fencing should be constructed in order to prevent missiles being thrown on site. Waste should not be stored close to the perimeter of the site or visible and in the open without shelter/protection.	Fencing, gates entrance and CCTV in place with third party monitoring 24/7.
Procedures should be developed and implemented, and training provided, for regular site inspections that include, but are not limited to, the following areas:	SOP / risk assessment in place / daily checks / weekly checks / minimum standards / PPM systems.

• Condition and operation of treatment plant • Condition of site vehicles/fork lift trucks • Fire detectors, alarms, and fire-fighting equipment • Standards of general housekeeping • Condition of pallets, racking and shelving • Integrity and condition of canisters, drums, containers, tanks, packages, pipework, hoses, seals, and couplings. • Fire exits, signs and emergency lights • Spill containment provisions • Condition and adequacy of PPE • Condition of nitrogen plant / cylinders and associated pipework. • Waste identification/labelling, containment, segregation and separation. • Condition and content of bunds and drains • Adequacy of earthing/grounding • Building ventilation • Condition and accuracy of monitoring/sampling equipment	