**REPORT**

# ICMI RE-CERTIFICATION SUMMARY REPORT

*Lučební závody Draslovka a.s. Kolín*

Submitted to:

**International Cyanide Management Institute (ICMI)**
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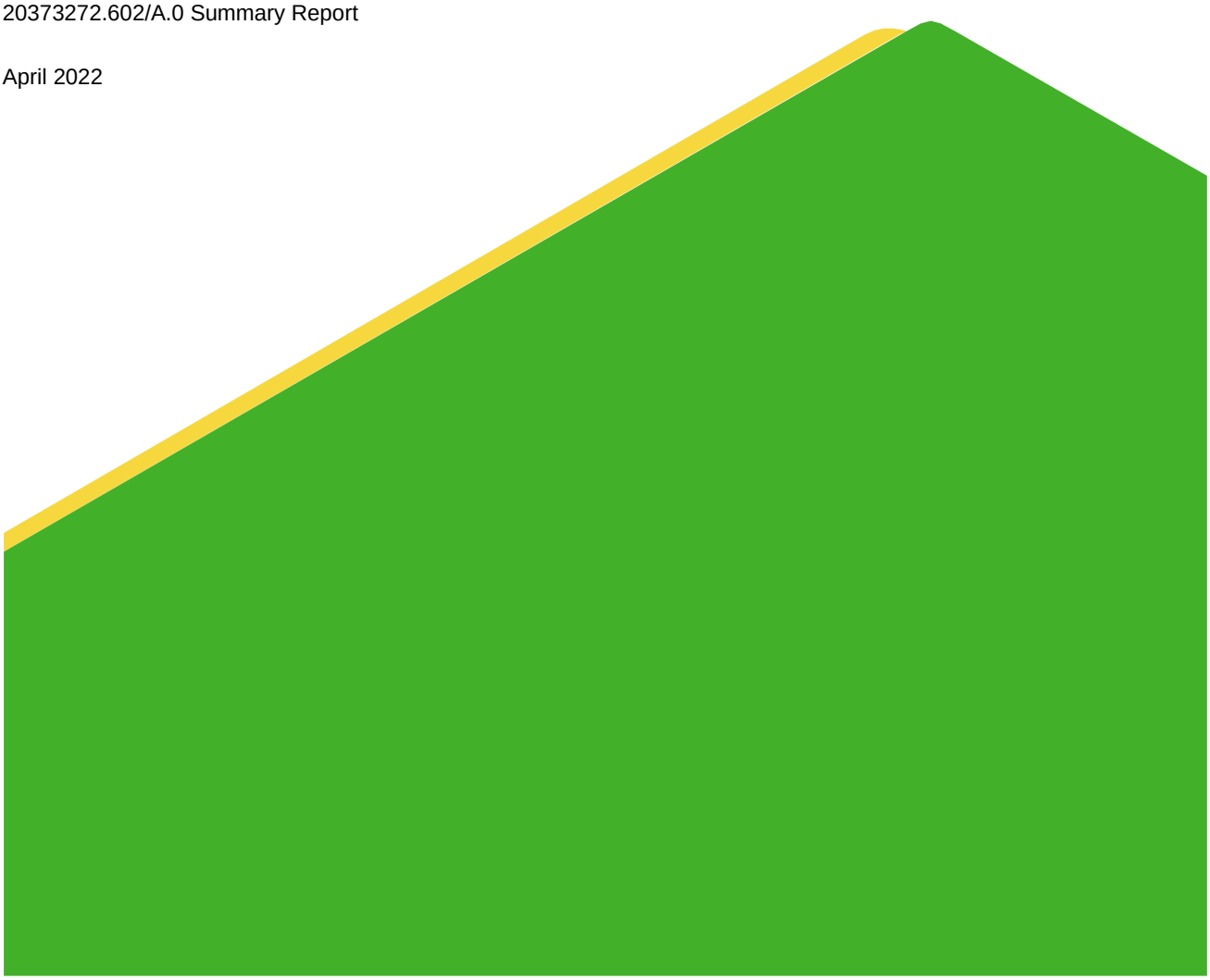

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# 1.0 SUMMARY AUDIT REPORT FOR CYANIDE TRANSPORTATION OPERATIONS


**Name of Cyanide Production Facility:** Lučební závody Draslovka a.s. Kolín

**Name of Facility Owner:** Lučební závody Draslovka a.s. Kolín

**Name of Facility Operator:** Lučební závody Draslovka a.s. Kolín

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# 2.0 SITE OVERVIEW

Draslovka's production site in Kolín, Czech Republic has been ICMC-certified and registered since March 24, 2011, with no suspension since then.

The scope of this audit covers the cyanide manufacturing process (raw materials through to packaging) at Draslovka's Kolín facility. It does not include the loading and transportation of the finished product off-site. Other chemical manufacturing processes undertaken at Draslovka were not included within the scope of this audit, except where systems or processes were shared with those involving cyanide production or they served as an example of how a shared system was applied.

## 2.1 Background

The Draslovka facility is located on the southeast side of the town of Kolín (which is located around 50 km east of Prague). A site location map (Figure 1) is presented at the end of this section. The Draslovka facility is located in a mainly industrial/commercial area of Kolín although some residential land use is located adjacent to part of the facility.

Activities at the Draslovka facility commenced around 1906 and included the production of cyanides.

The company currently manufactures a range of products at the facility including cyanides and chemical whose origin are cyanide.

The site has around 300 employees and has a certified quality management system in accordance with ISO 9001 and environmental management system in accordance with ISO 14001.

The site produces around 23,000 tonnes per annum of cyanide products.

Cyanide is manufactured at the facility using the Andrussow process. In this process, natural gas (methane), ammonia and oxygen are reacted over a platinum/rhodium catalyst to form hydrogen cyanide (HCN) gas. The HCN gas is then absorbed into caustic soda to form a solution of sodium cyanide (or potassium hydroxide to form potassium salts). This cyanide liquor is then concentrated, crystallised, dried and compacted into solid sodium cyanide.

# 3.0 SUMMARY AUDIT REPORT

## Auditors Findings

| | | |
|---|---|---|
| Draslovka a.s. | ☒ **in full compliance with**<br>☐ in substantial compliance with<br>☐ not in compliance with | **The International Cyanide Management Code** |

This operation has maintained FULL COMPLIANCE with the International Cyanide Management Code throughout the previous three- year audit cycle.

**Audit Company:** Golder Associates

**Audit Team Leader:** Dale Haigh - Lead Auditor

**Email:** dale.haigh@wsp.com

## Dates of Audit

The Re-certification Audit was undertaken over 4 days, between 4 and 7 October 2021, with additional review of documents and questions both before and after the site visit.

The audit was undertaken by Dale Haigh of Golder Associates. Dale Haigh is pre-certified as an ICMI Lead Auditor and ICMC Production Specialist and he acted in this capacity during the audit.

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Cyanide Productionation Operations and using standard and accepted practices for health, safety and environmental audits.

| **CyPlus Supply Chain No. 6- Finland Supply Chain** | | |
|---|---|---|
| Name of Facility<br>Draslovka a.s. | Signature of Lead Auditor<br>  | Date<br>6 April 2022 |

# 4.0 PRINCIPLE 1 – OPERATIONS

## Design, construct and operate cyanide production facilities to prevent release of cyanide.

**Production Practice 1.1:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 1.1? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 1.1**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 1.1; design and construct cyanide production facilities consistent with sound, accepted engineering practices and quality control/quality assurance procedures.

Quality control and quality assurance programs were implemented during construction of cyanide production and storage facilities. These records have been retained. Appropriately qualified personnel reviewed facility construction and provided documentation that the facility was built as proposed and approved.

All design and construction quality information is held on file.

During the past 3 years (since the last audit) the following new plant has been installed:

- • Warehouse Modernisation
- • Modernisation of the (cyanide) Finalisation Line.

A design is initially provided and may include details of equipment (certificate of conformance, P&IDs etc). Once the draft is approved the final design is provided to the Municipality. Once approved by the Municipality, the construction of the new item or area is completed and a “realisation” document (i.e. an as built) can be produced. This document includes all certificates of conformance for installed equipment and details of construction quality. The realisation document is reviewed by the Municipality departments to sign off the design and construction information. After the documentation has been reviewed the Municipality inspects the completed works or installation and then approves the project.

Golder reviewed the CE certificate of conformity, completion certificate, operational manual, service report, completion report and completion certificate and certificate for the completion company for the Warehouse improvements. External approval is via an approval stamp by the City of Kolin on the Completion Certificate (June 2020). The review confirmed that appropriately qualified persons have inspected the cyanide operations at the facility.

In addition to the above documents, the site is inspected annually by several departments (Czech Inspectorate, County Office of Kolín, Police of Central Bohemian Region, Work Inspectorate, Fire Brigade, and Regional Environmental Inspectorate) under the law of prevention of serious accidents. The last inspections were in May 2019 and September 2021 and no issues were identified (no inspection in 2020 due to covid restrictions). The Environmental Department also review the site each year, and the last inspections were in September 2020 and 2021. Reports from the above inspections were reviewed and no issues were identified.

The materials used for construction of cyanide production facilities are compatible with the reagents and processes used by the operation. The site has a standard procedure for material compatibility depending on

the materials being used across the site including the cyanide plant. The procedure has a detailed list of the types of material, plastics, steel types etc that can be used in areas of cyanide manufacture. Examples of these compatible materials were observed in the cyanide manufacturing plant and wastewater treatment plant.

Maintenance shut down calendars also show where equipment is replaced and the detail of the type of material used in replacement, which is in compliance with the material compatibility list. Details of the new equipment installed in the last three years were also provided and show compatibility for the use.

Electronic (SCADA) controls have been fitted to the cyanide manufacturing plant. These allow the production and wastewater systems to be automatically shut down in the event of power outages or equipment failures. These systems also mitigate against releases to the environment. This system is fitted with alarms before conditions approach a critical stage and so allow operator intervention to prevent any issues arising. The system also has automatic shut off measures should any critical levels be approached.

Any power failure automatically shuts down the hydrogen cyanide and the sodium (and potassium) cyanide production facilities in a failsafe manner with no releases.

Wastewater is treated on site and closely controlled prior to discharge. Discharges to the river are continuously monitored, and should relevant discharge criteria be exceeded, then an automatic shut-down valve is actuated and discharges stopped.

The facility also has a monitoring system for hydrogen cyanide in air containing 8 in plant (cyanide plant) detectors and 59 perimeter detectors. Should the monitored levels exceed relevant criteria then the system will alarm and be shut down manually.

The sodium and potassium cyanide production building is constructed over a concrete sealed surface that appears to be in good condition based on visual inspection during the site visit. Slight gradients within the area move any solutions to a central drain that are ultimately pumped to the wastewater treatment plant. Visual inspections of the surface of the floors across the plant (and tank farms) are performed by the production manager and are recorded on a quarterly basis. Records inspected by Golder were seen to cover the periods 2018 to 2021.

Any upgrade requirements identified during inspections (or identified by the plant manager) are forwarded to the maintenance department and repairs made in accordance with Draslovka's standard maintenance procedure.

Secondary containment for process and storage tanks and containers are constructed from materials that provide a competent barrier to leakage and are sized to hold a volume greater than that of the largest tank or container within the containment. Historic calculation show that the bund is more than capable of holding storm water from a 1 in 100 event and the largest tank release. In addition, storm water is managed via operational procedures. Bunds filled with water are pumped out (after testing) to wastewater tanks by the fire department and this activity is considered a priority activity each day.

All pipe work carrying liquid cyanide is constructed with containment (i.e., within two concentric pipes) and has a gradient such that liquid in the pipeline drains back to the storage tanks. An absorbent insulation layer lies in between the two pipes.

The facility also operates a spill containment procedure. In the event of spillage, the automatic effluent discharge stop valve would be closed, halting any discharge of water from the site to the river. The internal site storm water drainage system is split into three zones and following any spill incident, these three zones would be contained by manually closing off penstock valves. The extent of spill is identified using sampling and analysis on site followed by identification of which of these three areas of the storm water drainage system has been impacted. The identified impacted zones would then be pumped to the wastewater treatment system for

treatment before the system is re-opened. Spill absorption materials are also available within the cyanide plant and wastewater treatment plant. The fire brigade also carries absorbent materials.

Solid cyanide is stored with measures to avoid or minimise the potential for exposure of cyanide to moisture. For the wooden containers, the cyanide is directly filled into a polyethylene bag which is sealed on filling and this bag is wrapped within a polypropylene bag which is also sealed. These bags are kept within a sealed wooden crate. Tins of solid cyanide are also stored inside polyethylene bags which are sealed and then kept within the sealed tin.

The temporary store inside the cyanide plant and the main warehouse used to storage cyanide have ventilation and this is constantly monitored, with alarm levels set at 1 and 3 ppm. The site itself is secure and only approved persons are allowed into site. Further controls are applied at the entrance to the plant and warehouse areas where an additional security check is present. The storage areas are also subject to camera monitoring 24 hours per day. Cyanides are stored separately from incompatible materials.

**Production Practice 1.2:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 1.2? Explain the basis for the finding.**

☒ **in full compliance with**

**The operation is**

☐ in substantial compliance with **Production Practice 1.2**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 1.2; Develop and implement plans and procedures to operate cyanide production facilities in a manner that prevents accidental releases.

The facility has developed and implemented plans and procedures to operate cyanide production facilities in a manner that prevents accidental releases.

Draslovka has an integrated management system which includes quality, environment, safety and responsible care. The system includes organisation procedures (prefixed OS) and developed technical documentation (prefixed VTD), which are available to all employees on the intranet and are included in training to all employees. All of these documents undergo review and revision and there is documentary evidence that all of these documents have been revised (at least once) during the past three years.

The technical documentation and organisational procedures align with the requirements of the use permit, the integrated inspections by the local authority and the IPPC permit.

The technical documentation includes procedures to be used for the production of cyanide, apply to the cyanide plant activities and identify specific hazards and define control measures employed to ensure a safe and environmentally sound operation.

The facility has a usage permit and has an integrated inspection by a combination of regulatory authorities to check that the plant and activities are constructed and operated in a manner to protect against accidents. The facility also has an IPPC permit that ensures environmental controls and requires monitoring information to be reported to the regulators.

The facility also has procedures for contingencies during upsets in its activities.

The facility has developed specific procedures for non-routine and emergency situations. These include dealing with fire protection management (OS 22-01), an internal emergency response plan (OS 22-02), emergencies and extraordinary activities (OS 24-02) and the water management emergency plan (OS 25-03). Training is

provided for these plans and procedures and mock drills have been performed and records of these reviewed by the auditor.

Incidents can be identified in a number of ways at the site including visual identification (high risk areas are included in CCTV monitoring by the plant operatives and the fire brigade), monitoring of cyanide levels and alarm levels from the continuous hydrogen cyanide gas monitoring system, monitoring and alarm levels from the effluent monitoring system. Should incidents occur then the emergency response team would attend.

The facility uses monitoring devices to confirm that controls are adequate to limit worker exposure to hydrogen cyanide gas and sodium, calcium or potassium cyanide dust using personal monitors and the remote monitoring inside the cyanide plant.

Fixed monitors are found in the following locations:

- 59 detectors at locations on the boundary of the site
- 9 detectors inside the HCN gas production building
- 8 detectors inside the solid cyanide production building

The fixed monitors are calibrated and provide real time measurement of actual concentrations being detected. The monitors all report to the fire brigade control room and production control rooms.

Should these alarms be activated then internal and external emergency services are automatically called to respond.

A standard procedure describes how production is controlled and planned changes are managed. Example change sheets were observed for two projects.

Preventative maintenance programs are in place and activities documented for the maintenance of equipment and devices necessary for cyanide production and handling.

The majority of the planned preventative maintenance occurs within planned shut-down periods. Planned preventative maintenance records are electronically and were observed. Maintenance work is signed before the work starts by the manager responsible for that area and also signs off once the work is completed.

Process parameters are constantly monitored and the instrumentation is calibrated. Draslovka maintain a record of equipment that requires calibration.

Procedures are in place and being implemented to prevent unauthorized/unregulated discharge of cyanide contaminated water to the environment and spills. The facility is also bound by the conditions of its environmental permit and this includes the setting of discharge limits for cyanide in water.

The cyanide process plant and liquid cyanide storage areas lie within contained areas. Any cyanide solution or contaminated water that collects in these contained areas enters the drainage system and is directed to the wastewater treatment facility. If there is a spillage outside these contained areas an alarm is raised and the surface water shut off valve is immediately closed to prevent any contaminated water/liquid cyanide being released. Following the contaminated water/liquid cyanide can then be pumped out and directed to the waste water treatment plant.

There have been no spills in the last three years.

This facility has a waste management procedure which sets out the requirements for the management of cyanide wastes. Limited waste volumes are produced in the process. Solid cyanide materials are dissolved on site and then transferred to the waste water treatment plant where they are treated prior to being discharged.

Solid materials that may be contaminated with cyanide are stored in the covered (and signposted) container specifically for this waste and are then disposed of via an appropriately licensed disposal route using authorised contractor.

There are procedures to ensure that the cyanide is packaged and labelled as required by the political jurisdictions through which the packaged cyanide will pass. Regulatory requirements for labelling for the jurisdictions that Draslovka cover are detailed in specific procedures.

Procedures are also in place to ensure that the cyanide is packaged as required by the political jurisdictions through which the load will pass.

Relevant staff are also provided with training in the handling of cyanides and other hazardous substances. Training records for 2020 were observed at the time of the site inspection.

Draslovka has obtained the ADR certificates for packaging and for labelling its solid cyanide in steel drums and in wooden crates. Training is provided to Draslovka staff by ADR Safety Advisors (DBV-ITL) who are accredited by the Czech Ministry.

**Production Practice 1.3: Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 1.3? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 1.3**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 1.3; Inspect cyanide production facilities to ensure their integrity and prevent accidental releases.

The operation is in full compliance with Production Practice 1.3; inspect cyanide production facilities to ensure their integrity and prevent accidental releases.

The facility conducts routine inspections of the structural integrity of tanks, the integrity of secondary containments and pipelines, pumps and valves.

Draslovka conduct routine inspections of the cyanide manufacturing plant as follows.

Firstly, there is a visual check of the integrity of the structures (including tanks, valves, pipelines and containment systems) on a six-monthly basis. Any issues identified during these inspections (and during day-to-day operation) are notified to the maintenance team using the maintenance procedure.

There is also a requirement for statutory (required under Czech law) inspection and testing of certain equipment. These inspections and tests have to be performed and signed off by authorised (usually external) engineers. A plan of annual testing is drawn up by the maintenance department. Inspections of monitoring records and equipment, performed by the auditor confirmed that inspections by the plant manager would be effective at identifying potentially hazardous conditions.

Inspection frequencies are sufficient to assure that equipment is functioning within design parameters.

Draslovka document inspections and specify items to be observed and include the date of the inspection, the name of the inspector, and any observed deficiencies. The nature and date of corrective actions are documented, and records are retained.

All statutory testing records performed by external authorised contractors are held by the Maintenance Manager. The maintenance team develop detailed plans of maintenance requirements in advance and review these following the work.

## 5.0 PRINCIPLE 2 – WORKER SAFETY

## Protect workers' health and safety from exposure to cyanide.

**Production Practice 2.1:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 2.1? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 2.1**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 2.1; develop and implement procedures to protect facility personnel from exposure to cyanide.

Draslovka has developed technical documentation which is available to all employees on the company intranet. These technical documents include details of control systems to limit worker exposure both during normal operations and maintenance activities. Example procedures were observed.

There is a specific document detailing general safety instructions. These apply to the cyanide production activities and maintenance activities and identify specific hazards and control measures required to minimise worker exposure and include working with a buddy, PPE requirements for all activities including handling hazardous substances, requirements of health surveillance and risk assessments for different work tasks. It also includes first aid and fire protection details.

In addition, Draslovka has developed organisational procedures (prefixed OS) which are also available to all employees via the intranet. These organisation procedures are numerous but include those indicated as evidence that specifically detail procedures that support the minimisation of worker exposure.

There are specific procedures for non-routine and emergency situations. These include the following:

- Internal Emergency Plan (OS 22-02); Emergencies and Extraordinary Activities (OS 24-02)
- Emergency Service (OS 24-05)
- Water Management Emergency Plan (OS 25-03)

In order to ensure the plant is operating effectively and thus limiting exposure the plant is designed, constructed and operated in accord with legislative requirements. Each year two integrated inspections are performed by a range of regulatory authorities and led by the Czech Inspection Authority. They perform checks on equipment systems and operations for one inspection and environmental permit requirements on the second inspection. The last two inspection reports were reviewed and identified no major non-conformances.

A site wide monitoring system (for HCN and other gases) has been installed both at the site perimeter and within facilities that is continually monitored internally both in production control rooms and the fire brigade control room and externally as these measurements are also electronically sent to the City of Kolin.

Individuals operating and working in the plant are also provided with training about activities they are involved with, hazards at the facility, alarm systems and measures to take in the event of an incident.

Permits are used for maintenance activities and example permits were reviewed by Golder.

The facility does solicit and consider worker input in developing and evaluating health and safety procedures. Worker involvement involves the review of draft procedures being sent to all employees asking for comment within 7 days. Those comments are either incorporated or discussed with the relevant employees (who provided comment) to develop a resolution.

The facility has identified areas and activities where workers may be exposed to hydrogen cyanide gas and/or cyanide dust exceeding 10 parts per million (ppm) on an instantaneous basis or 4.7 ppm continuously over an 8-hour period.

The Safety Data Sheet and legal requirements identify risks associated with hydrogen cyanide gas and cyanide dusts. These risks are evaluated within a procedure that considers the specific activities in different areas of the cyanide plant and considers and assesses the risk. It identified whether further control measures are required and determines what they are. Some of these control measures include the use of PPE and the selection of appropriate PPE is stated within a procedure.

The facility uses monitoring devices to confirm that controls are adequate to limit worker exposure to hydrogen cyanide gas and sodium, calcium or potassium cyanide dust to 4.7 parts per million (5 mg/m3) or less, as cyanide.

The facility uses both fixed and portable monitors that measure hydrogen cyanide gas (HCN) and other harmful gases used at the facility.

The detectors identify HCN to ppm level and provide real time measurement of actual concentrations being detected. The monitors all report to the fire brigade control room and the ones from inside the production buildings also report to the control rooms in each of the two production buildings. The off-gas detector and HCN storage area report to the HCN production control room.

The detectors are designed to alarm at set levels. All these detectors also alarm at the Fire Brigade Control Room.

On receiving an alarm, the fire brigade control room phone through to the associated production area plant control team and find out why the area is alarming to determine if further emergency action is required. The fire brigade control room is manned 24 hours a day. In addition, the fire brigade control room has CCTV surveillance cameras for the site and can see all high-risk areas and production areas.

Should these alarms be activated then emergency services are automatically called to respond.

In addition, portable HCN gas monitors manufactured by MSA are also used by Draslovka.

Hydrogen cyanide monitoring equipment is maintained, tested and calibrated as directed by the relevant manufacturer. Recent calibration certificates were provided for the fixed and personnel cyanide detectors.

All work in the cyanide plant requires at least two people working together. This was observed during the site visits.

If assistance is required, then there is an emergency number (333) which can be dialled to alert the internal emergency services who will attend immediately. An additional mobile number is also posted in each area of the Cyanide Plant.

The facility does assess the health of employees to determine their fitness to perform their specified tasks. The site has a procedure which is aligned with the Czech legal requirements for employee health checks. This identifies the frequency and type of health checks for different roles in the organisation including staff involved with the cyanide plant. There is also a doctor on site. Typical doctor meetings are scheduled annually if <60 years old and twice per year for > 60 year olds. Testing is dependant on role, but can include blood tests, urine tests and lung function tests.

The facility does have a clothing change policy or procedure for employees, contractors and visitors that enter areas with the potential for cyanide contamination of clothing.

Draslovka use warning signs advising workers of the presence of cyanide and indicating where necessary that suitable personal protective equipment must be worn. The site also has procedures detailing the types of signs to be used.

All staff are prohibited from smoking, eating or dirnking and form having open flames in areas where there is apotenial for cyanide contamination. The site also has procedures which detail these requirements.

**Production Practice 2.2: Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 2.2? Explain the basis for the finding.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The operation is** | ☐ in substantial compliance with | **Production Practice 2.2** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 2.2; develop and implement plans and procedures for rapid and effective response to cyanide exposure.

The facility has developed written emergency response plans and procedures should cyanide exposures occur:

- OS 22 - 02 Internal Emergency Response Plan. This provides measures for the whole Draslovka facility including all cyanide production and other non-cyanide Draslovka manufacturing departments in case of accidents and for mitigation of accidents
- OS 24 - 02 Emergency and Extraordinary Activities. This aims to set a procedure to prevent and deal with emergencies and extraordinary events
- OS 24 - 05 Emergency Services to deal with Emergencies and Crises. This ensures that there is a top-level management of emergency incidents outside of normal office hours
- OS 25 – 03 Water Emergency Plan identifies potential polluting sources of the surface and sub-surface and provides guidelines to deal with such incidents

Showers, low-pressure eye wash stations and non-acidic fire extinguishers are located at strategic locations throughout the facility including within the HCN production building and Cyanide Production building and at various other cyanide or hazardous chemical associated locations within the facility. These are formally inspected at least every six months by the cyanide production manager and safety department and records of this inspection are recorded. The fire extinguishers are inspected four times a year by the safety department and are also checked by an external contractor, annually. Records are retained and examples were reviewed.

The oxygen equipment is also annually inspected by an external contractor SZDT Lubor, Vesely. Water, oxygen, resuscitation equipment, cyanide antidote, and a means of emergency communication and notification are readily available for use in the plant.

During the site inspection a number of emergency showers and eye wash stations were tested, antidote kits were viewed and expiry dates checked, oxygen cylinders were viewed.

Communication of an emergency situation is via an audible alarm, there is also a site wide public address system that can be used for the whole site or just parts of the site and is operated by the fire department. In addition, there are radios, mobile and landline phones that can be used.

Safety Data Sheets (SDS), first aid procedures and other informational materials on cyanide safety is in the language of the workforce and is available to workers in the areas where cyanide is handled. Specifically, the antidote administering instructions that were provided were in the Czech language and were stored with the kits.

Storage and process tanks, and containers and piping containing cyanide are identified to alert workers of their contents. The direction of cyanide flow in pipes is indicated.

Procedure Health Safety and Environmental Regulations OS 24-06 also displays the hazardous warning signs that should be located on tanks and in areas where cyanide containing materials are located.

The facility has a decontamination policy and procedure for employees, contractors and visitors leaving areas with the potential for skin exposure to cyanide.

Employees, visitors and contractors are initially provided with induction training that provides information about the hazards of working with cyanide and the procedures in place to deal with these hazards.

All employees, contractors and visitors leaving areas after they have worked in locations that may give rise to skin exposure to cyanide have to take a shower and then wear clean clothes.

The facility has its own on-site capability to provide first aid and medical assistance to workers exposed to cyanide. The facility has a health centre which is staffed with a doctor during the general office hours. The health centre manages the health assessment of employees as well as managing incidents occurring. Outside of general office hours the local hospital is on support from paramedics and doctors. They are aware that the site is a cyanide production facility and have been involved in mock drills at the site. All workers at Draslovka are also provided with first aid management training every 3 years, with a refresher each year.

The facility has an emergency response plan that includes the transport of workers to offsite medical facilities. For every emergency event the external emergency services are called immediately as a matter of course. On calling the local hospital they provide a paramedic and ambulance. If required, the ambulance provides transport to the local hospital. The local hospital is approximately 4 minutes' drive from the facility by ambulance. In addition, should the need arise the fire brigade have a car which can transport workers to the local hospital.

The local (Nemocnice Kolín) hospital is aware that the site is a cyanide production facility. The local paramedics from the Ambulance service provide first aid training to staff on site and are aware of cyanide use and hazards. They are also involved in mock drills at the site. The local hospital has been in correspondence with the facility regarding Cyanokits® held by the facility. These antidotes are handed over to the medical staff in the event that a cyanide exposure has occurred and have to be administered by doctors in accordance with Czech law.

There is also an External Emergency Plan (a formalised arrangement between the site and local authority including local emergency services) that was developed by the local authority. This included local hospitals and clinics and informed them about the potential hazards at Draslovka. The external emergency plan developed

responses for incidents from the facility and this included the provision of appropriately qualified medical support during an incident. They have also been involved in drills at the site, acting out the emergency response.

Mock emergency drills are conducted periodically to test response procedures for various exposure scenarios. Lessons learned from the drills are incorporated into response planning. Mock drills are performed with external emergency services to assess the response to an incident at Draslovka.

The mock drill reports were reviewed for 2018-2021 and include findings and recommendations which are followed up. Example improvements (for all parties) were reviewed.

Procedures have been implemented for the investigation and evaluation of cyanide exposure incidents to determine if the facility's programs and procedures protect worker health and safety and response to cyanide exposures are adequate or need revision.

No cyanide exposure incidents have occurred in the last 3 years at the site. The site does have a procedure to follow in the event of an incident and this follows the requirements in Czech law.

## 6.0 PRINCIPLE 3 – MONITORING

## Ensure that process controls are protective of the environment.

**Emergency Response Practice 3.1:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 3.1? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 3.1**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 3.1; Conduct environmental monitoring to confirm that planned or unplanned releases of cyanide do not result in adverse impacts.

The operation is in full compliance with Production Practice 3.1; conduct environmental monitoring to confirm that planned or unplanned releases of cyanide do not result in adverse impacts.

The Draslovka site has a direct discharge to the River Labe (also called the Elbe) on the north east boundary of the site. There is a railway line between the northeast boundary of the site and the River Labe. The discharge from the site flows under the railway line and then directly into the river. The discharge includes water from the waste water treatment facility and the surface water drainage system. Water that may contain cyanide or other contaminants is treated through the waste water treatment facility prior to discharge. This includes contaminated groundwater from beneath the site which is a legacy issue that the Regional Authority (Městský Úřad v Kolíně) are aware of.

The site-wide surface water drainage system comprises three colour-coded 'branches' enabling water from different areas of the site to be analysed and where necessary isolated e.g. where there is a spill in a particular area. In the event of a spill, any water collected from the drainage system, after it has been isolated, is pumped by the fire brigade to the waste water treatment plant.

The waste water treatment facility comprises chemical treatment using hydrogen peroxide for the oxidation of cyanide and other contaminants. The waste water is treated on a batch process. The waste water is tested prior to discharge to ensure that the relevant legislative and other requirements are complied with. The waste water is then sent to the site drainage system.

The monitoring point for the combined waste water from the drainage system is located on the north eastern boundary of the site before it passes under the railway for subsequent discharge to the River Labe. The discharge to the River Labe is a dedicated discharge point solely for the Draslovka, Kolín facility. Discharge volumes are monitored. Monitoring of the waste water is undertaken at this point continuously using a pH meter (as an indicator of contamination). Sampling and analysis of the discharge water is undertaken on a monthly basis by an accredited laboratory.
The laboratory used for cyanide analysis is UNS, a nationally accredited laboratory (laboratoř Č 1066 akreditovaná Ceským institute pro akreditaci, o.p.s.). The tests used by the laboratory conform to CSN ISO 6703 – 1 and 2. CSN ISO 6703 -1 is classified as total cyanide by the cyanide Code whilst CSN ISO 6703 - 2 is classified as WAD cyanide by the cyanide Code. The detection limit for these laboratory methods is 0.002 mg/l. The laboratory results for the water discharged into the river, collected at the on-site monitoring location have been provided for review for 2018 to 2021. Total cyanide results are <0.002 mg/l and all WAD results for the same time period are less than 0.002 mg/l.

The IPPC Permit for the site has a total cyanide limit of 1.6 mg/l above which, operations and procedures must be reviewed, and an absolute maximum total cyanide limit of 4 mg/l which must not be exceeded. All monthly measurements during the period 2018 to 2021 (inclusive) have been below 0.5 mg/l total cyanide.

The River Labe is monitored twice per year close to the discharge location from the site. All results at the site's surface water discharge point (during the past three years) are less than 0.061 mg/l total cyanide, with total cyanide less than 0.03 mg/l during the same period.

Whilst a mixing zone for discharge to the River Labe has not been stipulated for the Site, the River Labe, is a major river in the area. The flow rate for the River Labe near Kolin is approximately 16 m3 s-1 (value obtained from Site). The dilution that this will provide for water discharging from site (<0.03 m3/s based on site data for 2018 to 2021) is at least 500 times dilution and will therefore cause the WAD cyanide concentration in the river downstream of the site (due to discharge from the site) to be well below 0.03 mg/l (in fact would be <0.00012mg/l WAD cyanide). The concentration of free cyanide will be less than this value.

There is historic contamination of cyanide in the groundwater underneath the site, which is due to activities during the Second World War including the destruction of the site during an air raid. In addition, poor practice during the communist era may have contributed to this contamination. It is also likely that groundwater contamination is travelling to the site from historic off-site activities. The Regional Authority (Městský Úřad v Kolíně) considers the cyanide from these sources as legacy issues and that Draslovka are not responsible. Furthermore, the Regional Authority (Městský Úřad v Kolíně) has installed a groundwater remediation system to manage the contaminated groundwater.

Draslovka has an agreement with the Regional Authority (Městský Úřad v Kolíně) regarding remediation of the historic contamination. The agreement states that remediation is the responsibility of the Regional Authority due to its historic nature. This is detailed in the agreement between the National Property Fund and Lučební závody a.s. (the company that was subsequently split to form Draslovka) dated 3 March 1994. As a consequence of this agreement, a remediation system comprising a containment wall at the boundary between

the site and the River Labe was constructed in December 2012. Draslovka operate the plant on behalf of Regional Authority (Městský Úřad v Kolíně) and pump groundwater from wells on site. The abstracted groundwater is passed through the waste water treatment plant along with other cyanide contaminated waste streams.

Draslovka does not have a responsibility to meet the groundwater quality criteria; however, they do operate the groundwater abstraction and treatment system on behalf of the Regional Authority (Městský Úřad v Kolíně). Due to the historic contamination beneath the site there are no groundwater compliance points relevant to Draslovka.

Groundwater monitoring wells are monitored four times per year and results of monitoring wells down gradient of the containment wall (there are monitoring wells also upgradient and downgradient of the wall) are below the limit of 0.05 mg/l total cyanide (for monitoring events in 2018 to 2021), with the exception of D8 and DR20 which are extracted and pumped to the wastewater treatment plant.

The facility does limit the atmospheric process emissions of hydrogen cyanide gas such that the health of workers and the community are protected.

The IPPC permit, sets air emission limits of 10 mg/m3 of cyanide and also a 100 g/hour limit for specific air emission within the cyanide plant. The 10 mg/m3 limit can be exceeded so long as the 100 g/hour limit is not. Cyanide levels in air have to be monitored every three years from the locations identified within the IPPC permit. A review of the results for February 2019 indicated that all results are below limits. Mass release limits were also below 100g/hour of cyanide.

A site wide monitoring system (for HCN and other gases) has also been installed both at the site perimeter and within facilities that is continually monitored internally both in production control rooms and the fire brigade control room and externally as these measurements are also electronically sent to an external authority every 30 minutes.

Fixed monitors are found in the following locations:

- 59 detectors at locations on the boundary of the site
- 9 detectors inside the HCN gas production building
- 8 detectors inside the solid cyanide production building

The fixed monitors are manufactured by MSA and calibrated regularly. The detectors are designed to alarm (with alarm levels agreed with the municipality) at 15ppm and 25ppm. All these detectors also alarm at the Fire Brigade Control Room. On receiving an alarm, the fire brigade control room phone through to the associated production area plant control team and find out why the area is alarming to determine if further emergency action is required. The fire brigade control room is manned 24 hours a day. In addition, the fire brigade control room has CCTV surveillance cameras for the site and can see all high-risk areas and production areas.
Monitoring is conducted at frequencies adequate to characterize the medium being monitored and to identify changes in a timely manner.

In addition, portable HCN gas monitors manufactured by MSA are also used by Draslovka staff on entry into the production areas and by emergency response staff. The portable monitors have an alarm setting at 1 ppm (whole shift occupational exposure level) and 3 ppm (maximum level). These are held and used by the Fire Brigade and Cyanide Production staff.

# 7.0 PRINCIPLE 4 – TRAINING

## Protect communities and the environment through the development of emergency response strategies and capabilities.

**Training Practice 4.1:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 4.1? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with

☐ not in compliance with

**Production Practice 4.1**

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 4.1; Train employees to operate the facility in a manner that minimizes the potential for cyanide exposures and releases.

The facility trains workers to understand the hazards of cyanide and refresher training is periodically conducted.

The first level of training is provided once an employee has joined the company before allowing them to work with cyanide (induction training). This training relates to a procedure - Handling of Cyanides. Additional training includes working in the cyanide plant and worker safety and fire prevention training. All procedures are on the intranet and available to employees at any time.

Workers are provided with refresher training in the handling of cyanide every year. Example records were observed on site. According to the HR Manager training records are kept on file for individuals during their lifetime of working at the site. In addition, records have to be kept for 10 years minimum.

Employees receive training in the use of PPE before being allowed to work with cyanide as part of the induction training in accordance with procedures. These procedures detail the use and provision of PPE, its distribution, washing, cleaning, disinfection, and inspection. Training includes all aspects of these procedures and example records of this training being received during the past three years were observed on site.

Specialist training is also provided for use of filter masks, detection, protective suits for use in hazardous areas (including the cyanide production areas) and Self-Contained Breathing Apparatus. Example training records for cyanide production staff were obtained from the cyanide production manager and were inspected during the site visit.

There is also appropriate signage around the site to indicate the PPE requirements for each area.

Employees undergo formal training with the relevant head of department and where necessary external organisations to help them perform their normal production tasks. The details of the training required for each employee is defined by their roles and detailed in a procedure.

This training is detailed in training forms held by the head of each department. Example records of this training were observed in the cyanide production area.

Major Accident and emergency planning training is also provided each year.

Each year a training plan is developed that includes details of internal and external training to be delivered. The training plan for 2021 was observed during the site visit. Induction and periodic training required for all employees is detailed in the training plans.
The HR Manager keeps records of qualifications of external training persons and examples of recent records were seen at the time of the site visit. Examples of external training for first aid, fork lift truck and train driving were provided showing relevant qualification of providers.

Internal trainers also have to hold relevant qualifications and details of these qualifications are held on site.

Training for working in the cyanide plant is provided by the plant manager who has relevant chemical qualifications alongside considerable number of years' experience working with cyanide.

The facility does evaluate the effectiveness of cyanide training which is ascertained through a range of techniques including written tests, verbal tests and observation of work.

The Maintenance Manager also indicated that people working in this department would be provided with training and after this training, their work would be inspected to ensure it was effective. All training courses are reviewed each year by the HR Manager. The effectiveness of emergency training is also assessed through the completion of drills as detailed in a procedure. The drills are evaluated, and any lessons learned identified.

**Training Practice 4.2:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 4.2? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 4.2**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 4.2; Train employees to respond to cyanide exposures and releases.

Before working in areas involving the use of cyanide, employees are provided with training in the Emergency Plan. Training is also provided each year for managing cyanide releases. During an interview with the Cyanide Production Manager, records of such training for the past there years were observed.

Training is provided on the procedures to be followed in the event of a cyanide release and production workers have additional training on the 'Release of dangerous chemicals (especially cyanide)', which also includes additional procedures.

Emergency Procedures are revised from time to time. When a change is required, a draft is created and sent to all employees. Comments can then be provided back to the author before the revised procedure is issued. Once a revised procedure is issued it is placed on the intranet and an email sent to everyone to inform them.

Mock emergency drills are conducted periodically as part of the Emergency Plan evaluation process and to confirm employees' understanding of the emergency procedures.

One procedure details the first aid measures for people affected by exposure to cyanide. The fire brigade is called for all emergencies. The fire brigade will activate medical assistance. The local ambulance service will also be called for all exposures. Outside office hours the medical assistance is primarily the attendance by the ambulance service. When there is exposure to cyanide there is also evacuation of the required area and this process is also detailed in a procedure. This procedure was confirmed through an interview with the Cyanide Production Manager and a video of a mock drill at the cyanide plant was provided showing response to cyanide exposure.

Training requirements are defined in the Human Resources and Employee Training procedure. For each training event a report is produced (on a standard form) which details the name of the person being trained, department and location, elements of training, training test details and name of trainer. Training records are held by Human Resources and kept by the head of the relevant department. Examples of these forms were observed for the cyanide production and maintenance staff and show training events in 2019, 2020 and 2021 for individuals.

# 8.0 PRINCIPLE 5 – EMERGENCY RESPONSE

## Protect communities and the environment through the development of emergency response strategies and capabilities.

**Emergency Response Practice 5.1:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 5.1? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 5.1**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 5.1; prepare detailed emergency response plans for potential cyanide releases.

The facility has developed an Emergency Response Plan to address potential releases of cyanide on site or that may require the facility to response.

The main elements of the Emergency Response Plan are included in an Internal Emergency Plan; Water Management Emergency Plan; Emergency and Extraordinary Activities; Emergency Service; and the External Emergency Plan.

The Internal Emergency Plan and Water Management Emergency Plan are produced by Draslovka and reviewed by the Regional Authority in addition to other stakeholders. The Internal Emergency Plan follows regulatory requirements and only requires updating when the regulatory changes are made. These are next planned to change at the end of 2022.

The Internal Emergency Plan includes a description of individual scenarios and their containment, safety precautions and means of containment, concept of operations and other plans to deal with Emergencies. The Water Emergency Plan identifies potential polluting sources of the surface water and ground water and provides detailed guidelines to deal with such incidents.

Training is provided for these plans and procedures and drills have been performed and records of the training reviewed by the auditor.

The Plan considers potential failure scenarios for its site-specific environmental and operating circumstances: Procedure OS 22-02 identifies the worst-case scenarios. The worst-case scenarios include the following scenarios related to cyanide:

- Production leak of HCN that spreads to the environment;
- Leak of HCN from reactor and spread to the environment;
- HCN leak from container H502 and associated pipeline
- Failure of pipes or pits in the cyanide neutralisation pits
- Failure Raw material and product storage.

Other scenarios were ascertained to be lesser scenarios but it was stated that these should be treated in a similar manner.

Procedure OS 25-03 Water Management Emergency Plan details actions in the case of any contaminants entering the site drainage system. It also provides details of any remediation that should take place in the event of spills and includes the details of the use of the emergency quick seal valve and the drainage shut off valves.

The External Emergency Plan contains details of actions required by the Regional Authority, Emergency Services and local community in the event of a catastrophic release of hydrogen cyanide.

Releases during fires and explosions - The Internal Emergency Plan details fire and explosion prevention measures as well as safety precautions and means of containment. The procedure in case of a fire or fire alarm is given in OS 22-01 Fire Protection Measures. In the case of a fire the fire brigade would respond and have advanced equipment to deal with chemical leaks and fires including producing curtain spraying. Each production building has emergency response cards that are produced for the fire crews that detail the equipment needed to deal with an incident in that building, the fire hydrant points, the services shut off locations, the amount of hazardous substances present, emergency routes, monitoring detector points, the location of extinguishers, the number of people that work at different times in the building and other important information required.

Power outages and equipment failures - In the working instructions for example PI01TR02-01 Production of Sodium Cyanide there is a section that deals with power outage and equipment failure and there are back up power systems in the production buildings.

The Plan describes the following:

Specific response actions, as appropriate for the anticipated emergency situations, such as evacuating site personnel and potentially affected communities from the area of exposure; and,

Control of releases at their source including limiting the leakage of HCN if it is safe to do so with any liquid HCN being diluted with water and neutralised with caustic soda.
If there is a second or third level alarm, with third level being the most severe, a message will be broadcast over the public address system detailing the nature of the emergency and the necessary actions to be undertaken.

For any emergency other than a very minor spill the fire brigade will be contacted and will be in charge of the response.

The External Emergency Plan (section 5) details the actions to be undertaken by the Kolín emergency services and the Regional Authority in the event of a major spill including evacuation of the community surrounding the site. This would be done by the police and Kolín fire brigade. In addition, Draslovka has a public address system and alarm that would be heard by the immediate surrounding neighbours. Announcements made for Level 3 emergencies are addressed to the surrounding area and detail emergency response actions to be taken including getting inside the buildings and shutting windows.

Use of cyanide antidotes and first aid measures for cyanide exposure - The Emergency Plan contains a Trauma Plan detailing the first aid actions required, location of first aid kits, antidote administering instructions, availability of the on-site doctor and general first aid instructions.
Containment, assessment, mitigation and future prevention of releases - The Water Emergency Plan details how the person with knowledge of the emergency will talk to the Commanding Officer so that the cause of any situation that may lead to the contamination of surface water or groundwater can be prevented, including securing the emergency quick seal valve, plugging pipe work, pumping residue from tanks, repairing tanks, etc. As soon as possible employees will map out the severity of the accident and contain the accident in coordination with special accident mitigation methods e.g. spill kits. The Fire brigade have pneumatic plugs to isolate the relevant branches of the drainage system, and other spill containment equipment and materials.

**Emergency Response Practice 5.2:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 5.2? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 5.2**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 5.2; designate appropriate response personnel and commit necessary resources for emergency response.

The operation is in full compliance with Production Practice 5.2; involve site personnel and stakeholders in the planning process.
The facility has involved the workforce and other stakeholders such as potentially affected communities in the emergency response planning process.

The development of the Internal Emergency Response Plan involved the fire brigade, Heads of Departments, and employees. When emergency response planning documents are updated, they are provided in draft format to all employees for comment before the final draft is produced.

When the Internal Emergency Response Plan and Water Emergency Plan are produced and updated, they are also sent to the Regional Authority who send them on to the following authorities for comment: Central Bohemian Police Headquarters, Central Fire Service, Central Bohemian Health and Sanitation Services, Central Bohemian Work Inspectorate, Central Bohemian Integrated Rescue Services, Czech Environmental Inspectorate and State Ministry of the Environment. A letter approving of the latest changes to the Internal Emergency Plan was observed.

When the External Emergency Plan is updated by the Regional Authority this is sent to Draslovka for the company to comment before it is finalised. According to site staff, the next update is due by the end of 2022.

The City of Kolin have also published emergency response information for the public on their website.
The facility has made potentially affected communities aware of the nature of the risks associated with accidental cyanide releases and has consulted with them regarding what communications and response actions are appropriate.

The Regional Authority is made aware of the risks associated with accidental cyanide releases through the production of the three main plans (the Internal Emergency Response Plan, The Water Emergency Plan and the External Emergency Plan). This allows the Regional Authority as the designated representatives of the local community to review Draslovka's internal emergency procedures and to produce their own (external) emergency plan with regards to how their department and the community will react in the event of such a release.

In addition, there are periodic drills at the site which involve the Regional Authority and the emergency services such as Kolín municipal fire brigade, Two regional fire-fighting crews, Eight volunteer fire-fighting crews, Draslovka's fire-fighting crews, The ambulance service, The police, The Environmental Department at the City of Kolín, Kolín Municipal office, The Central Bohemian Regional Environmental Department, The Health and Sanitary Inspectorate, Chemical Laboratory Training Centre in Kamenice and the representatives from Kolín Railway station.

The facility has involved outside responders and medical facilities in the emergency planning and response process. The hospitals have been required to be directly involved in order for their capacity to deal with such an emergency to be detailed within the External Emergency Plan and what back up capacity may be required. This is detailed in the External Emergency Plan.

In the event of any exposure of workers on site an ambulance is requested and therefore there is a clear communication process between the site and the external responders. This is detailed in the Internal Emergency plan.

There is also a flow chart in the External Emergency Response Plan that details contact numbers and which services should be contacted by who, the appropriate parts have been integrated into the internal emergency plan.
The facility engages in regular consultation and communication with stakeholders to ensure that the Plan addresses current conditions and risks.

Draslovka also engages in regular communication with the emergency services in order to undertake the emergency drills on site with a drill involving outside emergency services being undertaken every three years. The authorities also carry out detailed environmental inspections of the site every year. The level of communication with the Kolín Municipal office is such that the external detector readings are sent electronically

to the Kolín Municipal office every half an hour. Therefore, the Kolín Municipal office can also determine if there are any issues at Draslovka directly.

**Emergency Response Practice 5.3:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 5.3? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 5.3**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 5.3; designate appropriate personnel and commit necessary equipment and resources for emergency response.

The Emergency Response Plans detail the following:

Designates primary and alternate emergency response coordinators with explicit authority to commit the resources necessary to implement the Plan, identifies Emergency Response Teams and specifies the duties and responsibilities of the coordinators and team members.

The Commanding Officer is a term within national legislation for the person who is in charge of an emergency response. The responsibilities of the Commanding Officer are stated in the national Fire Regulations. The regulations state that the Commanding Officer can only delegate their responsibilities if they feel that they are beyond their capabilities and then only to a higher authority. The Commanding Officer for Draslovka is stated as being the Shift Leader of the Fire Brigade. The Emergency Response Team in all situations on site is the Fire Brigade shift leader, who will co-ordinate all internal parties and any external responders. This is stated in the Internal Emergency Plan along with the specific responsibilities of the coordinators and team members depending on the nature of the emergency. In each shift of the fire brigade there are two people that are capable of being the commanding officer.

The Emergency Response cards contained in each building detail the procedures to be followed in the event of an emergency which vary depending on the building.

Members of the Fire Brigade have the same training as the municipal fire service. The Ministry of the Interior provides documented requirements for the training of all fire services on an annual basis. These requirements are then included within the training requirements by Draslovka of the Fire Brigade. The Training requirements for the Fire Brigade in 2021 were observed.

The Internal Emergency Plan contains a flow diagram which shows the various parties that are to be contacted in the event of an emergency together with the contact numbers, including 24 hour contact information. In addition, the Emergency Response Cards contained in each building detail the procedures to be followed in the event of an emergency. The first response is always to contact the fire brigade. The Internal Emergency Response Plan also has 24 hour contact information for the head of each department

The fire brigade has all of the necessary emergency equipment, which is detailed in the Internal Emergency response plan this includes fire engines, spill clean-up materials, first aid equipment and gas detection monitors. In addition, all of the departments have appropriate first aid equipment oxygen, SCBAs and this is also present

on the first aid room outside HCN production SO-01. The detail of this equipment is contained in an Annex to OS 24-06 Safety Health and Environmental Regulations. Equipment was observed during the site visit.

All equipment is checked, inspected and maintained. This is managed by the Safety department in accordance with procedure OS 09-02 Maintenance Planning and Recording. External support from approved external contractors is provided for the oxygen and resuscitation equipment and cyanide monitoring equipment. Inspection records were observed and appeared to be in order.

The details of outside responders, medical facilities and communities in emergency response procedures are contained within the External Emergency Plan produced by the Regional Authority and the Internal Emergency Response Plan.

The facility has a health centre staffed with a doctor and nurse during office hours. Outside of office hours medical support is obtained from the local hospital. In the event of an emergency with a risk of cyanide exposure an ambulance/paramedic is called as a matter of course, the doctor on site is more of a general practitioner than emergency responder.

If there is a release of cyanide that may impact the local community (i.e. the town of Kolín), the fire brigade will inform the town's police and Kolín's fire brigade, who will implement the External Emergency Plan.
Periodically there is a drill involving all of the relevant external parties. The facility has confirmed that outside entities included in the Plan are aware of their involvement and are included as necessary in mock drills or implementation exercises.

Outside entities are represented through the involvement of the Regional Authority. The involvement of outside entities is detailed in the External Emergency Plan which is created by the Regional Authority and reviewed by Draslovka. Normally once every three years an emergency drill is undertaken on site with the involvement of the Regional Authority and the emergency services (this altered slightly due to COVID19). The last such drill was undertaken in September 2018 the report for which was reviewed during the site visit. Interviews with site personnel confirmed the inclusion of external parties in these mock drills.

**Emergency Response Practice 5.4:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 5.4? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 5.4**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 5.4; develop procedures for internal and external emergency notification and reporting.

The Plan includes procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the emergency, as appropriate.

The Internal Emergency Plan contains a flow diagram that shows the various parties to be contacted in the event of an emergency together with the contact numbers. In addition, the Emergency Response Cards

contained in each building detail the procedures to be followed in the event of an emergency. The first response is always to contact the on-site fire brigade. The fire brigade will then inform all of the relevant agencies internally and externally, where required, including the Kolín police station.
The Plan includes procedures and contact information for notifying potentially affected communities of the incident and/or response measures. The Plan also includes procedures for communication with the media.
The fire brigade as the first responders and in fulfilling their legal requirement as the Commanding Officer contacts the appropriate external agencies. This includes the Kolín Police station representatives who coordinate the community response measures. The community response measures are detailed in the External Emergency Plan.

Draslovka have Communication Officers who have the responsibility of co-ordinating the company's response to the media in the event of an emergency.

The operation does have a written procedure for notifying ICMI of any significant cyanide incidents. The notification procedures are part of the emergency Services procedure (OS 24 05).

No significant cyanide incidents have occurred at the site and so not contact has been made with ICMI to date.

**Emergency Response Practice 5.5:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 5.5? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 5.5**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 5.5; Incorporate remediation measures and monitoring elements into response plans and account for the additional hazards of using cyanide treatment chemicals.

The Plan describes specific, appropriate remediation measures including recovery or neutralization of solutions or solids, decontamination of soils and/or other contaminated media and management and/or disposal of spill clean-up debris and provision of an alternative drinking water supply as appropriate.

The Internal Emergency Plan contains specific response actions to the release of hydrogen cyanide gas or solid cyanide. The actions are to limit the leakage of HCN if it is safe to do so, with any liquid HCN being diluted with water and neutralised with caustic soda. The solidified HCN must be disposed of by contractors by incineration. Employees must do everything possible to prevent migration into the drainage system and any contaminated soil must be removed and placed in the retention basins for neutralisation and subsequent treatment.

The Water Management Emergency Plan also details actions in the case of any contaminants entering the site drainage system. It details the use of the emergency quick seal valve and drainage shut off valves. It also provides details of any remediation that should take place in the event of spills. This includes extraction of contaminated water by the Fire Brigade, any potentially contaminated water would be placed in the retention basins by the fire brigade prior to analysis and appropriate treatment.

It is not necessary to designate alternate drinking water supplies due to the distance to the potable water borehole and the fact that site is hydraulically contained.

The Plan does not prohibit the use of chemicals such as sodium hypochlorite, ferrous sulphate and hydrogen peroxide to treat cyanide that has been released into surface water because of the set up at the facility and the fact that only regulatory authorities can undertake this treatment.

Waste water and site drainage from the site is discharged to the River Labe. There is no surface water on site. All releases to the surface water are monitored frequently and may undergo treatment in the site's wastewater treatment plant before release.

If cyanide contaminated water were to be released from site into the River Labe it would be the River Authority's responsibility for any treatment. Draslovka has no authority to undertake any treatment of the river and therefore this is not included in any element of the Emergency Response Plan. The site would however work with the authorities (which the site would contact) and provide any required support. The site has carried out a mock drill which included a release to the river.

There have been no unauthorised releases of cyanide to the River Labe to date that the site is aware of.
The site is able to use the emergency quick seal valve to prevent any spilled liquids from being discharged to the river. This is a Parshall flume. This can be activated electronically from the fire brigade control room or manually at the flume, if required. The sealing time is 45 seconds or in the case of a power cut 15 minutes manually.

Any release of a chemical such as sodium hypochlorite, ferrous sulphate or hydrogen peroxide to the river is prohibited under national legislation unless the appropriate permits have been obtained. The site therefore complies with the prohibition on the use of such chemical by complying with national legislation.

The Plan addresses the potential need for environmental monitoring to identify the extent and effects of a release, and include sampling methodologies, parameters, and where practical, possible locations.

The Water Management Emergency plan details procedures to be taken after an incident including closing and securing the sealing valves, sealing damaged pipelines, safe storage of waste from emergency response and drainage clean-up, repairing tanks, and pumping remaining harmful substances from damaged packaging, tanks, storage and transport tanks. It also states that any incident involving the River Labe would be communicated to the River Authority.

The Water Management Emergency Plan details that where necessary Draslovka may undertake monitoring including upstream and downstream of the facility to determine the extent of contamination. This monitoring would be undertaken by an appropriate laboratory to approved standards.

**Emergency Response Practice 5.6:** **Is the operation in full compliance, substantial compliance, or non-compliance with Production Practice 5.6? Explain the basis for the finding.**

**The operation is**

☒ **in full compliance with**

☐ in substantial compliance with **Production Practice 5.6**

☐ not in compliance with

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Production Practice 5.6; Periodically evaluate response procedures and capabilities and revise them as needed. The Plan includes provisions for reviewing and evaluating its adequacy on an established frequency.

There is a legal requirement for the two main elements of the Emergency Response Plan to be reviewed on a five yearly basis. Draslovka reviews the internal emergency response plans every year and updates them if required. The procedures have to be reviewed and approved by the Regional Authority. Draslovka confirmed that the Local Authority has approved the latest Emergency Plans.

The External Emergency Plan is revised every five years and is produced by the Regional Authority with Draslovka reviewing any changes. A new version of the external emergency plan is expected to be issued by the Local Authority in 2022.

Procedures are maintained by designated authors for the Internal Emergency Plan and the Environment Manager. When a change is required, a draft is created and sent to all employees. There is then a 14 day review period for comments to be provided back to the author before the procedure is re-issued. Once a procedure is re-issued it is placed on the intranet and an email sent to everyone to inform them of the re-issue.

Environmental inspections are performed annually by the regulating authorities and this includes a review of emergency plans and measures.

Mock emergency drills are conducted periodically as part of the Plan evaluation process, Routine drills are undertaken for each high risk department or activity on an annual basis plus periodic drills with the authorities (e.g. fire authority). The drills involve both spill and cyanide exposure scenarios. Mock drill reports were reviewed for 2018 to 2021.

Drills involving outside agencies are normally undertaken on a three yearly basis, which involves the town's and area's emergency services in addition to Draslovka's employees. The last such drills took place in 2018 and 2019.

Draslovka is part of a Mutual Aid Scheme (MAS) that involves providing assistance for any cyanide related emergencies in Europe. This includes undertaking drills with other members of the MAS and reviewing performance. The most recent MAS drill was in the Netherlands in 2018 and was attended by representatives from Draslovka.

If these drills demonstrate a deficiency within the emergency plans then the Safety Manager instigates a review of the emergency plans. This was confirmed by the Safety Manager; however, a review of the emergency plans due to the outcome of a drill has not been required to date.

There are provisions to evaluate the Plan after any emergency that required its implementation and for revising it as necessary. This is detailed in the plan, which states reasons for a change to the Internal Emergency Response Plan. There has not been an emergency at the facility since the last ICMI audit in 2017 and therefore no review has taken place directly relating to this reason.

Environmental inspections are performed annually by the regulating authorities, and this includes a review of emergency plans and measures.

# Signature Page

**Golder WSP**

Dale Haigh
*Lead Auditor*

Sophie Wheeler
*Reviewer*

Date: 6 April 2022

DH/SW/ab

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