Unit IG2: Risk assessment

Declaration: By submitting this assessment (Parts 1 – 4) for marking, I declare that it is entirely my own work. I understand that falsely claiming that the work is my own is malpractice and can lead to NEBOSH imposing severe penalties (see the NEBOSH Malpractice Policy for further information).

Important note: You must refer to the document 'Unit IG2: risk assessment – Guidance and information for learners and Learning Partners' while completing all parts of this assessment. Your Learning Partner should provide you with a copy, but it can also be downloaded from the relevant resources section for this qualification on the NEBOSH website.

Part 1: Background

You should aim to complete this section in 150 - 200 words.

Topic	Comments
Name of organisation*	Engro Fertilisers Limited
Site location*	Daharki, District Ghotki, Sindh, Pakistan
Number of workers	1382 workers
General description of the organisation (100 words)	Engro Fertilisers Limited is a large fertiliser manufacturing organisation in Pakistan, which processes urea among other agricultural chemical products to support the farming industry. The company possesses a large industrial plant comprising production plants, utility plants, storage dumps, warehouses, laboratories and administrative buildings. The chemical processing, high-pressure systems, rotating machines, handling of materials and transport activities on the site are some of the operations involved. The employees are maintenance, operation, contractors, engineers, drivers and warehouse workers. The organisation possesses well-organised operational procedures and endeavours to provide safe working environments through training, supervision, as well as safety management system.
Description of the area to be included in the risk assessment (35 words)	Some of the areas to be evaluated with respect to risk included the urea production unit, ammonia handling area, maintenance workshop, warehouse, and loading bay. These areas are: chemical exposures, mechanical hazards, lifting, noise and vehicle transportation.
Any other relevant information (35 words)	The site operates 24/7 in shifts. Contractors generally work on shutdown and Maintenance. The emergency response facilities include fire-fighting systems and first aid. Production areas need PPE, and high-risk work is undertaken using a permit to work.

* If you're worried about confidentiality, you can invent a false name and location for your organisation, but all other information provided must be factual.

You should aim to complete this section in 100 - 200 words.
Note: this section can be completed after you have completed your risk assessment.

Outline how the risk assessment was carried out. This should include: • sources of information consulted. • who you spoke to; and • how you identified: - the hazards. - what is already being done; and - any additional controls/actions that may be required.	Some of the key sources that we have consulted in this risk assessment to learn the job risk profiling, the inspection principles, and the ILO electrical safety guide to standards of hazard controls and safe working practices, are: ILO International Standard Classification of Occupations (ISCO) of electrical workers, ILO Labour Inspection Convention (C068), and the ILO electrical safety guide. (https://www.ilo.org/public/english/bureau/stat/isco/isco88/6112.htm). ILO C068 (https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C068) (https://www.ilo.org/global/topics/labour-administration-inspection/resources-library/publications/guide-for-labour-inspectors/electrical-safety/lang--en/index.htm). We also conducted interviews with the supervisors of the sites, safety officers, electricians, and production staff, in order to obtain some useful information about work, controls, and previous accidents. Their contribution explained practical exposure and adherence to practices. Hazards were identified through walkthroughs and task analysis, together with discussions with the workers. Given controls were up-to-date controls, which we recorded, such as PPE, lockout procedures, and training. Suggested other measures include electrical isolation measures improvement, refresher training and better signage in the risky areas.

Part 2: Risk Assessment

Organisation name: Engro Fertilisers Limited
Date of assessment: 01 – February – 2026
Scope of risk assessment: Urea plant, ammonia handling, utilities, maintenance workshop, warehouse, offices, loading/unloading bays, internal roads, and contractor work areas.

Hazard category and hazard	Who might be harmed and how?	What are you already doing?	What further controls/actions are required?	Timescales for further actions to be completed (within …)	Responsible person's job title
Hazard category and hazard	**Who might be harmed and how?**	**What are you already doing?**	**What further controls/actions are required?**	**Timescales (within …)**	**Responsible person's job title**
1) Electricity – damaged cables, exposed wiring, wet areas	Electricians, operators, and contractors may suffer electric shock, arc flash burns, unconsciousness, or fatal electrocution when working near live panels, faulty motors, wet floors, or temporary wiring during maintenance.	1. Routine panel inspections. 2. Warning labels. 3. Trained electricians.	1. Install RCD protection. 2. Replace damaged cables. 3. Improve the LOTO system. 4. Restrict wet zones.	1 week 1 week 1 month 2 weeks	1. Electrical Supervisor 2. Maintenance Supervisor 3. HSE Officer 4. Area Supervisor
2) Fire – ignition, flammable storage, hot work	All workers, visitors, and contractors may suffer burns, smoke inhalation, heat stress, or fatalities due to ignition from welding, electrical faults, poor storage of flammable liquids, gas leaks, or blocked emergency exits.	1. Extinguishers installed. 2. Fire alarms. 3. Basic hot work permit.	1. Fire load inspection. 2. Improve hot work supervision. 3. Clear exits & signage. 4. Monthly drills.	1 weeks 1 week 1 week 1 month	1. HSE Manager 2. Permit Issuer 3. Admin Manager 4. Fire Marshal
3) Working at height – scaffolds, ladders, platforms	Maintenance teams, contractors, and inspectors may fall and suffer fractures, head injuries, spinal damage, or death due to unsafe scaffolds, improper ladder use,	1. Harness use. 2. Scaffold tagging. 3. Supervisor monitoring.	Work-at-height permit. Anchor points.	2 weeks 1 month 1 week	1. Maintenance Manager 2. Engineering Manager

Hazard category and hazard	Who might be harmed and how?	What are you already doing?	What further controls/actions are required?	Timescales for further actions to be completed (within …)	Responsible person's job title
	missing guardrails, or weak anchorage points.		Ladder inspection register. Rescue plan practice.	1 month	3. HSE Officer 4. Site Supervisor
4) Confined spaces – tanks, pits, vessels	Maintenance staff and contractors may suffer asphyxiation, toxic gas exposure, unconsciousness, or death due to oxygen deficiency, ammonia vapours, lack of ventilation, or poor rescue readiness during entry work.	1. Permit system. 2. Gas testing. 3. Standby person.	1. Confined space rescue drill. 2. Ventilation fans. 3. Calibrate gas detectors. 4. Entry log monitoring.	1 month 2 weeks 2 weeks 1 week	1. HSE Manager 2. Maintenance Supervisor 3. Instrument Technician 4. Permit Coordinator
5) Movement of people & vehicles – collision risk	Pedestrians, forklift operators, drivers, and visitors may suffer crush injuries, fractures, or fatalities due to reversing vehicles, blind spots, speeding, poor road markings, and mixed pedestrian/vehicle routes.	1. Speed limits. 2. Security gate control. 3. Road markings.	1. Separate walkways. 2. Add crossings. 3. Traffic marshal peak time. 4. Reverse alarm checks.	1 month 2 weeks 2 weeks 1 week	1. Admin Manager 2. HSE Officer 3. Security Supervisor 4. Transport In-charge
6) Load handling equipment – forklifts, cranes	Operators and nearby workers may be struck by falling loads, crushed between equipment, or injured due to unstable lifting, poor rigging,	1. Operator licensing. 2. Basic equipment inspection.	1. Daily checklist system.	1 week 2 weeks	1. Warehouse Supervisor 2. Lifting Supervisor

Hazard category and hazard	Who might be harmed and how?	What are you already doing?	What further controls/actions are required?	Timescales for further actions to be completed (within …)	Responsible person's job title
	overload, equipment failure, or unsafe lifting practices in warehouses and bays.		2. Lifting plans for critical lifts. 3. Load chart display. 4. Exclusion zones.	1 week 1 week	3. Maintenance Supervisor 4. Area Supervisor
7) Work equipment – rotating machinery, entanglement	Operators and maintenance workers may suffer amputations, cuts, fractures, or entrapment if clothing/hands get caught in rotating shafts, belts, fans, or unguarded moving parts during operation or cleaning.	1. Fixed guards. 2. SOPs. 3. Emergency stop buttons.	1. Guard inspection schedule. 2. Interlock system. 3. Machine safety training refresh.	2 weeks 2 months 1 month	1. Production Manager 2. Engineering Manager 3. HSE Officer
8) Hazardous substances – ammonia, acids, solvents	Operators, lab staff, and maintenance workers may suffer chemical burns, poisoning, breathing difficulty, eye damage, or long-term illness due to leaks, spills, poor handling, or incorrect PPE during chemical transfer.	1. MSDS available. 2. PPE use. 3. Eyewash stations.	1. Spill response drills. 2. Improve chemical labelling. 3. Add gas detectors in risk areas. 4. Improve ventilation.	1 month 1 week 1 month 2 months	1. HSE Manager 2. Store Supervisor 3. Instrument Engineer 4. Utility Manager
9) Manual handling – lifting bags, tools, parts	Warehouse staff, fitters, and helpers may suffer back injuries, muscle strains, sprains, or chronic pain from repetitive lifting,	1. Trolleys available. 2. Awareness talks.	1. Manual handling training refresh.	1 month 2 months	1. HSE Officer 2. Warehouse Supervisor

Hazard category and hazard	Who might be harmed and how?	What are you already doing?	What further controls/actions are required?	Timescales for further actions to be completed (within …)	Responsible person's job title
	awkward postures, heavy loads, and poor lifting technique during routine work.		2. Introduce lifting aids. 3. Job rotation.	1 month	3. Operations Supervisor
10) Work-related driving – fatigue, speeding	Drivers and passengers may suffer serious injury or death from collisions caused by fatigue, speeding, poor weather visibility, mobile phone distraction, vehicle defects, or unsafe reversing in loading areas.	1. License checks. 2. Basic vehicle inspection.	1. Defensive driving course. 2. Journey management plan. 3. Fatigue monitoring & rest rules.	2 months 1 month 1 month	1. Transport Manager 2. Admin Manager 3. HSE Manager
11) Radiation – welding UV exposure	Welders and nearby workers may suffer arc eye (welder's flash), skin burns, and irritation due to UV radiation from welding without proper screens, face shields, and restricted access to welding zones.	1. Welding shields. 2. PPE face protection.	1. Improve welding screen barriers. 2. Restrict access zone. 3. Welding PPE audits.	1 week 2 weeks 1 month	1. Workshop Supervisor 2. Maintenance Supervisor 3. HSE Officer
12) Noise – compressors, turbines, blowers	Operators, technicians, and contractors may develop hearing loss, tinnitus, stress, and reduced concentration due to continuous high noise levels in turbine/compressor areas without proper hearing protection enforcement.	1. Earplugs issued. 2. Some warning signs.	1. Noise survey. 2. Mandatory hearing zones. 3. Audiometry tests. 4. Enclosures where possible.	2 months 1 month 3 months 3 months	1. HSE Manager 2. Area Supervisor 3. Medical Officer 4. Engineering Manager

Part 3: Prioritise 3 actions with justification for the selection

Suggested word counts
Moral, general legal and financial arguments for all actions: 300 to 350 words
For EACH action:
Specific legal arguments: 100 to 150 words
Likelihood AND severity: 75 to 150 words
How effective the action is likely to be in controlling the risk: 100 to 150 words

Moral, general legal and financial arguments for ALL actions (300 words)

Moral, general legal and financial arguments	Engro Fertilisers has the ethical responsibility to ensure that no harm to workers, contractors, and visitors is experienced, as all employees have the right to reach home safely after work. It is not only an obligation of a leading industrial organisation but also ethical in avoiding the loss of lives, severe injuries, and occupational diseases that cannot be cured and are highly likely to occur to an individual. Hazards of higher risk identified in the actions of choice entail risks which may lead to life-altering effects, such as electrocution, toxic and severe falls. Broadly speaking, organisations are expected to take reasonable and practicable steps to reduce the number of risks at the workplace. The failure to control the main risks can result in the creation of sanctions, criminal prosecution, fines, or loss of legal reputation. The implementation of the recognised safety management principles has been proven to be carried out by the adoption of structured systems such as lockout/tagout and more effective use of confined space management and safe work-at-height arrangements, which can be helpful to the organisation in facing legal scrutiny in the process of audit or inspection. There are direct and indirect costs in terms of finances when it comes to workplace events. The direct costs include costs on medical treatment, compensation, equipment damage, production lost time and emergency response costs. The indirect costs can prove to be more costly and include investigation time, replacement labour, retraining, reduced productivity, low employee retention and loss of stakeholder trust. There is also the possibility of large accidents which lead to the closure of plants, failure to achieve production targets and fines where contracts are concerned.

	These three steps taken by Engro Fertilisers can reduce the high-severity risks, stabilise the operations of the company and strengthen its care about the well-being of its employees. Overall, the measures will help to make the business sustainable by ensuring the protection of the people and ensuring the work does not cause any financial harm due to preventable accidents and health issues at work.

Justification for action 1

Action (Taken from column 4 of risk assessment)	Introduce lockout/tagout (LOTO) system improvement for electrical isolation and maintenance activities.
Specific legal arguments	The comparatively high-risk electrical hazards can lead to fatal occurrences, as even the malfunction of isolation can result in death. Under the general provisions of occupational safety, Engro Fertilisers will ensure that the electrical systems are safe and that a person will not come in contact with live conductors on inspection, fault-finding, and repair works. A formal lockout/tagout system is the recognised control whereby accidental energisation is avoided, and the workers are also secured, together with the contractors. A more rigid LOTO program is used to achieve a safe system of work endorsing and it demonstrates the fact that the organisation has taken rather sensible precautions in the way it handles the presence of foreseeable risk.
Consideration of likelihood AND severity • types of injury or ill health • number of workers at risk • how often the activity is carried out • how widespread the risk is	The likely injuries include: electric shock, arc flash burns, heart attack, and death. Electrical jobs are usual in Engro Fertilizers considering that operations are round the clock, with breakdowns and planned maintenance. During shutdowns, different types of people face risks of electric shocks, including electricians, persons who alter the settings of equipment, and contractors. Around 30–40 workers may be exposed during shutdown electrical activities. The hazard is common in panels, motors, MCC rooms and field equipment. The degree of risk is extremely high because a single misstep would translate to death. There are moderate to high risks where there is a rush during the process of isolation and bypassing procedures during emergency repairs. As a result, such an action is accorded priority since the effects will be disastrous to a population of employees.
How effective the action is likely to be in controlling the risk. This should include: • the intended impact of the action;	Improvement of LOTO will lead to much in the eradication of the possibility of unintentional energisation of machines and panels in order to ensure that they are insulated, closed and verified before the work is commenced. The ultimate goal is to prevent shocks and arc flash injury using a repeatable and controlled system that has training and supervision. The reason why the 1 month

• justification for the timescale that you indicated in your risk assessment; and • whether you think the action will fully control the risk	timescale is acceptable is that it will be sufficient to prepare the LOTO devices, conduct training, update procedures and audit checklists without reducing the maintenance that is required. This will contain the risk to very high levels, but not to eliminate the electrical hazards, as there are still instances that may require live testing. The risk that is left is hairspray when there is however, strict permits and supervision.

Justification for action 2

Action (Taken from column 4 of risk assessment)	Conduct confined space rescue drill and implement improved emergency rescue readiness.
Specific legal arguments	The limited space access has foreseeable risks, which comprises lack of oxygen, inhalation of gases and unforeseen collapse. Engro Fertilisers would ensure that work in the confined area is properly scheduled, controlled, and emergency facilities. The employer also has legal liabilities to assess the danger, provide safe regimes of work, incompetent supervision of work and emergency procedures, responsible to respond to the hazards. A rescue exercise demonstrates that the organisation can be aggressive in case the entrant collapses, and it also proves the appropriateness of the equipment, such as harnesses and lifelines, gas detectors and the communication systems. At minimum, where there is no known rescuing capability, a small-scale event may lead to death, and there is even a chance that untrained rescuers may be killed. The compliance is supported by written exercises and competency checks, that mean that Engro is respectably managing high-risk undertakings.
Consideration of likelihood AND severity • types of injury or ill health • number of workers at risk • how often the activity is carried out • how widespread the risk is	The potential harm could include suffocation, poisoning, unconsciousness and death. The work in a narrow scope is performed when cleaning, checking and closure of the tanks, pits and vessels are performed. Some of the works that are at risk are maintenance staff, contractors, and permit issuers. The level is extremely high in that any loss of breathable air will kill in a few minutes. Around 10–15 workers may be involved in confined space entry activities at one time. The likelihood is medium because entry work may be performed according to the schedule; however, the risks may be shifted immediately by the residual gases or improper ventilation. There are also possibilities of the risk being widespread, as in the plant, there are many confined spaces. The willingness to save is important because the delay encountered on the journey to the rescue has lowered the likelihood of saving the lives of people.

How effective the action is likely to be in controlling the risk. This should include: • the intended impact of the action; • justification for the timescale that you indicated in your risk assessment; and • Whether you think the action will fully control the risk	The rescue activities are used to improve the promptness of response, role separation and demonstrate functionality and correctness of the gear before an actual emergency. The end goal is to have no more deaths, as they will have an opportunity to ensure safe and immediate rescue of the worker without endangering the lives of other workers. The time frame of 1 month is reasonable as to the fact that training of the exercises and discovery of the synchronised functioning with the operations and the availability of rescue devices and trained crews are needed. This action will not completely prevent the dangers of the closed spaces, but will offer great relief to the impact of a particular phenomenon with preparedness improvement. The cumulative risk is greatly minimised and managed by the influence of gas examination, ventilation, and permit limitations.

Justification for action 3

Action (Taken from column 4 of risk assessment)	Implement a mandatory work-at-height permit system and strengthen fall prevention controls.
Specific legal arguments	Another important cause of fatal workplace accidents that are fatal is work at height that must be planned and controlled with utmost seriousness. Engro Fertilisers should ensure that safe systems of work are followed in regard to the use of ladders, scaffolds, platforms and high-level maintenance. It is at-risk areas to prevent falls, which should be reasonable as well as the legal requirements, competent supervision, provision of appropriate equipment and maintenance of inspection records. The control is strengthened by the permit-to-work system because it helps to ensure the scaffolds have been certified and that they have sufficient anchor points, there is a rescue plan that the workers have, and the workers are trained and wearing the right PPE. It is also boosting the management of the contracts by offering external employees similar standards on the site. This can be complemented by the legal adherence through proper documentation that reduces the chances of enforcement, and evidence of writing with a high-risk activity is conducted as far as possible.
Consideration of likelihood AND severity • types of injury or ill health • number of workers at risk • how often the activity is carried out • how widespread the risk is	In such injuries, there are fractures, head damage, spinal injury, and death. The routine of height work is carried out on a routine basis in the maintenance of equipment, repairing of pipes, inspection and shutdowns. The maintenance teams and contractors are also at-risk workers, particularly in the case of a turnaround. The severity of the problem is high as the falling, even minor, can cause fatal injuries. Around 20–30 workers may be exposed to work-at-height activities during major maintenance.

	The likelihood lies between medium and high where they do not handle ladders correctly, or they fail to inspect scaffolds, or they disregard using harnesses by employees. The fact that high access is required in most places makes it dangerous. Therefore, this action carries a high-priority to ensure that the consequences of minor injuries may be reduced in various departments.
How effective the action is likely to be in controlling the risk. This should include: • the intended impact of the action; • justification for the timescale that you indicated in your risk assessment; and • whether you think the action will fully control the risk	The Work-at-Height Permit System will reduce the risk because all the tasks, inspection of the equipment, and fall prevention plans will be prepared before the actual execution of the task. This would focus on avoiding falls due to the increase in control, monitoring and checks of compliance. Creating the format of permits can be realised on a short time scale, and the permit structures are enough to structure the 2-week timescale, as the introduction of the permit form can be carried out within a short time interval, after which, the training and enforcement of it can be conducted within a short time frame. This would be quite helpful in handling the risk, but may not be a full deterrent, as it still has chances of an error on behalf of the human factor. However, when there is a combination of checks, good supervision and (properly anchored) risk is brought down to minimum and tolerable levels.

Part 4: Review, communicate and check

Suggested word counts for each section:

- Planned review date or period and reasoning for this: **50 - 100 words**
- How the risk assessment findings will be communicated and who needs to know the information: **100 - 150 words**
- Follow up on the risk assessment: **100 - 150 words.**

Planned review date/period with **reasoning**	Formal review of the risk assessment shall be carried out every 12 months (in case of a major incident, significant change in operations process, installation of new equipment, or significant change in shutdown maintenance operation) of the operations. This stage is suitable because the plant is twenty-four hours, and the hazards such as electricity, narrow spaces, operating at height and working with chemicals are risky. The reason is that an annual review would ensure that the controls remain functional, training is up to date, and lessons learned regarding near-misses or audits will be included.
How the risk assessment findings will be communicated**, and** who you need to tell	The feedback will be obtained as toolbox meetings, employee reports to the manager, safety meetings and boards at the production and maintenance level. Using simple instructions and visual display, the most significant control measures, such as lockout/tagout requests, confined space permits, and work at height, will be explained. The risk assessment will be made available in the form of copies to the department managers, supervisors, permit issuers, the HSE team members, electricians, maintenance, warehouse teams and to the contractor supervisors. The risky activity and time schedules will be included in the weekly HSE report and placed in the control room. The

	mandatory site hazards and controls will be communicated to the contractors by providing them with a safety induction to ensure they become aware of the hazards they will face at the site.
How will you follow up on the risk assessment to check that the actions have been carried out	An audit based on permit-to-work and tracing action using an HSE action register will be the follow-up procedure. All the actions required are assigned a job position with its deadline, and a weekly completion of the progress update should be observed by the HSE Manager and other department heads. The evidence that will be collected to ascertain that it has been completed will include training attendance sheets, inspection checklists, calibration certificates and photos of improvement. Supervisors will conduct spot checks to ensure that things comply, e.g. that LOTO is properly used and work-at-height permits are in use. Sectional action will be reported and escalated to the senior management. Checking on effectiveness will also be done using incident trend, near-miss reportage, and safety observations.