

SAFEGUIDE OCCUPATIONAL HEALTH & SAFETY RISK ASSESSMENT GUIDE

APPLICATION EXAMPLE

OCCUPATION: MACHINE TOOL OPERATOR

PART A. GENERAL FACTS ABOUT THE OCCUPATION

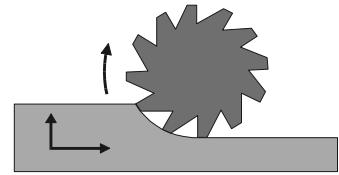
1. THE JOB OF A MACHINE TOOL OPERATOR

Machine tools operators are responsible for the production of metal elements by operating machine tools such as lathe, miller, planer, drill press, surface grinder and a wide range of modern CNC machine tools.

Common tasks performed by an electric welder include:

- Carrying the parts and locating the workpieces
- Mounting and fixturing of the parts to be machined
- Adjusting the machine parameters (cutting speed, cutting tool, coolants etc)
- Surveillance of the work, checking the workpieces and the machines
- Taking away the machined parts
- Keeping the workplace clean, collect and remove the chips and the swarf.

The equipment used by a machine tool operator includes: machine tools, cutting tools, adjustment tools, hand tools and mechanical aids to assist in moving, lifting and fastening of the parts.



2. MOST COMMON HAZARDS RELEVANT TO THE JOB OF A MACHINE TOOL OPERATOR



- Injuries (crushing, snagging) from moving machine parts
- Injuries as a result of flying components (chips, workpieces inadequately secured)
- Injuries as a result of carrying the workpieces
- Injuries during the chip and swarf removal
- Slip- fall hazard due to liquids, oil spills and garbage existing in the workplace.

3. MOST COMMON WORK RELATED DISEASES AND ILLNESSES RELEVANT TO THE JOB OF A MACHINE TOOL OPERATOR



- Dermatitis from contact with coolants and cutting fluids
- Operational deafening
- Permanent bronchitis, asthma
- Myoskeletal problems due to inappropriate working posture
- Possible cancer due to the use of poly-aromatic hydrocarbons (PAHs).

4. OTHER GROUPS OF WORKERS THAT ARE SUBJECT TO THE HAZARDS RELATED WITH THE JOB OF A MACHINE TOOL OPERATOR



Persons working near or passing by the machine tool operators' workplace are also exposed at flying chips and high noise level hazards.

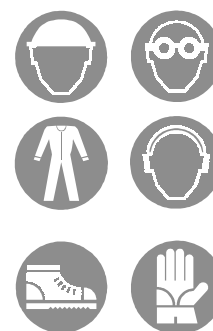
5. PREVENTIVE MEASURES IN THE JOB OF A MACHINE TOOL OPERATOR



- All the machines should be kept in good conditions and periodically checked and maintained according to the manufacturers' instructions.
- Protective covers should be kept in good condition and should not be removed.
- Machinery and tools should only be used for the purpose they were made for.
- Machine tools should only be operated by well trained, specialised and experienced personnel.
- Protective devices preventing hand or finger contact with the machines' moving parts to be installed where possible.
- Machine tools should not be left to work unattended.
- Machine tool operators should always use the appropriate PPE (see unit 7).
- Before starting any operation it is necessary to check the correct location and fixturing of the workpiece and also check for any forgotten tools on the bed of the machine.
- Manual checking adjustments and gauging work is prohibited while the machine is in operation.
- Maintenance and repair work must only be carried out with the machine not working and isolated from the power supply.
- The workplace should be kept tidy and obstacle free. Other requirements may include:
 - Additional lighting where necessary.
 - Suitable fire extinguishing apparatus and appropriately equipped first aid medical kit should be placed in a nearby and easily reachable place.
 - Emergency exits should always be reachable and appropriately signed.
 - Safety signs should be placed where necessary.
- Chip and swarf removal should only be done using the appropriate tools (swarf hook), not with the use of compressed air.
- The cutting fluid tank should be kept clean. No garbage or litter is allowed.
- Electrical Installations should follow the Internal Electrical Installations Regulation should be followed (K.E.H.E.).

6. PERSONAL PROTECTIVE EQUIPEMENT OF A MACHINE TOOL OPERATOR

- Safety Spectacles
- Protective footwear
- Apron
- Gloves (not while operating rotating machinery)
- Helmet
- Close fitting clothing.



Machine tool operators having long hair should tie them up or wear a cap. No finger rings, bracelets etc. are allowed when working.

Some brief guidelines for the selection of the appropriate Personal Protective Equipment are given in APPENDIX 2. In every case the relevant EN Standards should be taken into account.

7. LEGISLATIVE REQUIREMENTS IN THE JOB OF A MACHINE TOOL OPERATOR



A state licence is not necessary for a worker to do the job of a machine tool operator. The duties are assigned from the employer, who is responsible for the sufficient training and the proper adaptation of the worker to his tasks.



9. DESCRIPTION OF THE PARTICULAR WORKPLACE

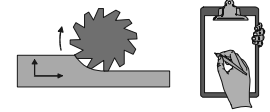
This image shows a full page of a document template designed for handwritten notes or answers. It features approximately 20 evenly spaced horizontal dotted lines across the entire width of the page, providing a guide for letter height and placement. The background is plain white, and there are no margins, headers, or footers visible.

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PART B. WRITTEN RISK ASSESSMENT



WORKPLACE:..... **ASSESSMENT DATE:**.....

1. HAZARDS ASSOCIATED WITH THE RAW MATERIALS USED			
POTENTIAL HAZARDS	LIK.	SEV.	PREVENTIVE/ PROTECTIVE MEASURES
<i>Hazards associated with the raw material supply</i> <ul style="list-style-type: none"> Injuries as a result of carrying or lifting of the workpieces 			<ul style="list-style-type: none"> The transportation should be done with the appropriate means (fork lift vehicle, conveyor, crane, trailer) Use the appropriate PPE (protective gloves and footwear)
<i>Hazards associated with the temporary storage of the raw materials used</i> <ul style="list-style-type: none"> Injuries from the fall or misplacement of the workpieces 			<ul style="list-style-type: none"> Appropriate storage (rigging, stacking securing) Use the appropriate PPE (protective footwear)
<i>Other potential hazards associated with the raw materials used</i>			<i>Preventive and protective measures that are proposed</i>

2. HAZARDS ASSOCIATED WITH THE CURRENT PRODUCTION PROCEDURE			
POTENTIAL HAZARDS	LIK.	SEV.	PREVENTIVE/ PROTECTIVE MEASURES
<i>Tools, Machinery, Fixtures etc in use.</i> <ul style="list-style-type: none"> • Injuries due to uncovered moving machine parts or badly maintained machinery • Injuries from tools 			<ul style="list-style-type: none"> • Proper maintenance, frequent checks of the machines • Protecting covers in good condition and not removed • Machinery and tools should only be used for the purpose they were made for
<i>Hazards associated with the work method used</i> <ul style="list-style-type: none"> • Injuries caused by long workpieces projecting beyond the machine tool (e.g. long bars) • Injuries caused from the ejection of the workpiece due to inadequate clamping or fixturing or the ejection of adjustment tools • Injuries from cutting tools • Injuries during the chip and swarf removal 			<ul style="list-style-type: none"> • Appropriate fixturing and clamping of the parts of the workpieces that are projecting beyond the machine tool (e.g. in a protective tube) • Check the correct mounting and fixturing of the workpiece • All adjustment tools should be removed before the machine is put into operation • While the machine is in operation manual checking adjustments and gauging work is prohibited • After the operation is finished, cutting tools should not be left around the workplace • The machines should not left to operate unattended • Use appropriate tool for the removal of the chips and swarf • Chip removal should only be done with the machine out of operation
<i>Hazards associated with repair and maintenance works</i> <ul style="list-style-type: none"> • Injured during repair and maintenance works 			<ul style="list-style-type: none"> • Maintenance and repair work must only be carried out with the machine not working and isolated from the power supply
<i>Mechanical hazards and ergonomic faults in the workplace</i> <ul style="list-style-type: none"> • Sleeve, hair, jewellery caught from machine rotating parts • Slip-fall due to oil or liquid • Myoskeletal problems due to inappropriate working posture • Insufficient working space 			<ul style="list-style-type: none"> • Close fitting clothing, no free-hanging long hair, no finger rings or bracelets • The space around the machine should be kept clean • Ergonomic design of the workplace
<i>Other potential hazards associated with the current production procedure</i>			<i>Preventive and protective measures that are proposed</i>

3. HAZARDS ASSOCIATED WITH THE WORKING ENVIRONMENT

POTENTIAL HAZARDS	LIK.	SEV.	PREVENTIVE/ PROTECTIVE MEASURES
<i>Physical Hazards</i> <ul style="list-style-type: none"> • Insufficient lighting • Noise 			<ul style="list-style-type: none"> • Improve lighting conditions locally • Use ear muffs • Noise screens, noise isolation • Proper maintenance, frequent lubrication
<i>Chemical Hazards</i> <ul style="list-style-type: none"> • Dermatitis from contact with coolants and cutting fluids 			<ul style="list-style-type: none"> • Use the appropriate PPE (gloves) • Avoid skin contact with cutting fluids
<i>Electricity</i> <ul style="list-style-type: none"> • Electrocution or fire due to insecure electrical installations 			<ul style="list-style-type: none"> • The Internal Electrical Installations Regulation should be followed
<i>Job site</i> <ul style="list-style-type: none"> • Quick fire spread due to flammable construction material, large openings and lack of fire extinguishing apparatus • Injuries during the emptying of the premises in case of emergency 			<ul style="list-style-type: none"> • Suitable fire fighting system. • Use of fire resistant construction material • Emergency exits should be kept open and easily reached • Appropriate safety signs
<i>Other potential hazards associated with the working environment</i>			<i>Preventive and protective measures that are proposed</i>

4. HAZARDS ASSOCIATED WITH THE FINAL PRODUCT AND SUBPRODUCTS

POTENTIAL HAZARDS	LIK.	SEV.	PREVENTIVE/ PROTECTIVE MEASURES
<i>Hazards associated with taking away of the final product and subproducts</i> <ul style="list-style-type: none"> • Injuries as a result of taking away the machined workpieces 			<ul style="list-style-type: none"> • Use the appropriate PPE (protective gloves and footwear) • The transportation should be done with the appropriate means (fork lift vehicle, conveyor, crane, trailer)
<i>Hazards associated with the temporary storage of the final product and subproducts</i> <ul style="list-style-type: none"> • Injuries as a result of fall or displacement during the storage of the machined workpieces 			<ul style="list-style-type: none"> • Use the appropriate PPE (protective gloves and footwear) • Appropriate storage (rigging, stacking securing)
<i>Other potential hazards associated with the final product and subproducts:</i>			<i>Preventive and protective measures that are proposed</i>

5. OTHER TYPES OF HAZARD

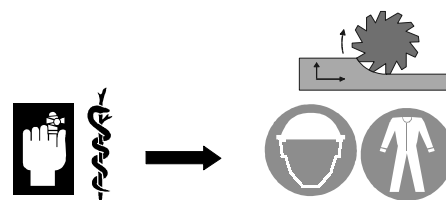
POTENTIAL HAZARDS	LIK.	SEV.	PREVENTIVE/ PROTECTIVE MEASURES
<i>Hazards associated with the poor organisation of work</i> <ul style="list-style-type: none"> • Working instructions that are not clear 			<ul style="list-style-type: none"> • Clear and explicit working instructions • Clearly defined tasks and duties
<i>Hazards associated with psychological factors</i> <ul style="list-style-type: none"> • Time pressure • Poor cooperation with co-workers and supervisors 			<ul style="list-style-type: none"> • Appropriate work schedule • Conditions that promote good cooperation
<i>Hazards associated with the particular requirements of the work and the particularities of the specific workplace</i>			

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PART C. POTENTIAL HAZARDS AND PERSONAL PROTECTIVE EQUIPMENT



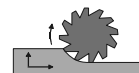
PART OF THE BODY AT RISK													
		HEAD					UPPER LIMBS	LOWER LIMBS	GENERAL				
		S C U L L	E A R S	E Y E S	F A C E	R E S P I R A T. T R A C K	H A R M S	F E E T	L E G S	S K I N	A B D O M E N	WHOLE BODY	OTHER IDENTIFIED PART OF THE BODY AT RISK
POSSIBLE HAZARDS													
MECHANICAL	FALLS FROM HEIGHTS												
	BURNS – CUTS												
	IMPACT – CRUSHING – ENTANGLEMENT											X	
	VIBRATION												
	SLIPS											X	
ELECTRICAL												X	
THERMAL	HEAT-FLAMES												
	COLD												
RADIATION	NON IONISING												
	IONISING												
NOISE			X										
CHEMICAL	GASES-VAPOURS												
	FUMES												
	MISTS												
	IMMERSION												
	SPLASHES										X		
GASES-VAPOURS													
BIOLOGICAL	HARMFUL BACTERIA												
	HARMFUL VIRUS												
	FUNGI												
PROPOSED PERSONAL PROTECTIVE EQUIPMENT		H E L M E T	E A R M U F F S	G O G G L E S	F A C E P R O T.	R E S P I R. D E V.	G L O V E S	P R O T. C L O T H I N G	F O O T W E A R	P R O T. C L O T H I N G	O I N T M E N T S C L O T H I N G	PROTECTIVE CLOTHING, PROTECTIVE EQUIPMENT AGAINST FALLS FROM A HEIGHT ETC	PROPER PROTECTIVE EQUIPMENT

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PART D. LEGISLATION - STANDARDS - REFERENCES



1. RELEVANT GREEK LEGISLATION



1. L. 1568/1985 “Υγιεινή και ασφάλεια των εργαζομένων”
2. D.L. 17/96 “Μέτρα για τη βελτίωση της ασφάλειας και της υγείας των εργαζομένων κατά την εργασία σε συμμόρφωση με τις οδηγίες 89/391/ΕΟΚ και 91/383/ΕΟΚ”
3. D.L. 16/96 “Ελάχιστες προδιαγραφές ασφάλειας και υγείας στους χώρους εργασίας σε συμμόρφωση με την οδηγία 89/645/ΕΟΚ”
4. D.L. 395/1994 “Ελάχιστες προδιαγραφές ασφάλειας και υγείας για τη χρήση από τους εργαζόμενους εξοπλισμού ατομικής προστασίας κατά την εργασία σε συμμόρφωση προς την οδηγία του Συμβουλίου 89/656/ΕΟΚ”
5. D.L. 105/1995 “Ελάχιστες προδιαγραφές για την σήμανση ασφάλειας ή/ και υγείας στην εργασία σε συμμόρφωση με την οδηγία 92/58/ΕΟΚ”
6. D.L. 377/1993 “Προσαρμογή της Ελληνικής Νομοθεσίας στις Οδηγίες 89/392/ΕΟΚ και 91/368/ΕΟΚ του Συμβουλίου των Ευρωπαϊκών Κοινοτήτων σχετικά με τις μηχανές.”
7. D.L.159/1999 “Τροποποίηση του προεδρικού διατάγματος 17/96 “Μέτρα για τη βελτίωση της ασφάλειας και της υγείας των εργαζομένων κατά την εργασία σε συμμόρφωση με τις οδηγίες 89/391/ΕΟΚ και 91/383/ΕΟΚ”

For more information and a further relevant investigation the following web site is proposed:
www.elinyae.gr

2. EUROPEAN EN STANDARDS RELEVANT TO THE PROPOSED PERSONAL PROTECTIVE EQUIPMENT (P.P.E.)



ENV 340	Protective clothing: General Requirements
EN 388-94	Protective gloves against mechanical risks
EN 510	Specification for protective clothing for use, where there is risk of entanglement with moving parts
EN 420-94	General requirements for gloves
EN 458-94	Hearing protectors – Recommendations for selection use care and maintenance – Guidance document
EN 379 –95	Industrial safety helmets
EN 812-99	Industrial bump caps
EN 345 –95	Specification for safety footwear for professional use
EN 346-93	Specification for safety footwear for professional use
EN 1550-97	Machine tools safety – safety requirements for the design and construction of work holding chucks

For more information and a further relevant investigation the following web sites are proposed:
www.elot.gr, www.idec.gr/ppe, www.cenorm.be .



3. SPECIALISED BIBLIOGRAPHICAL REFERENCES

- Μεθοδολογικός οδηγός για την εκτίμηση και πρόληψη του επαγγελματικού κινδύνου, Σ. Δρίβας, Κ. Ζορμπά, Θ. Κουκουλάκη, Β' έκδοση, ΕΛΙΝΥΑΕ, Αθήνα 1998
- Επιδημιολογία και πρόληψη επαγγελματικών νόσων, Α. Λίνου, Αθήνα 1989
- Καταγραφή κινδύνων υγείας και ασφάλειας της εργασίας σε μηχανουργείο, Α Κωστοπούλου, Αθήνα 1999
- "Υγεία και ασφάλεια στην εργασία": Υπουργείο εργασίας, Αθήνα 1987
- BS 8800 : 1996 "Occupational health and safety management systems"
- Croner's Risk Assessment, Croner Publications Ltd., Surrey 1995
- Handbook of Occupational Safety and Health, pp. 85-98, 2nd edition, 1999 John Wiley and Sons
- Encyclopaedia of Occupational Health and Safety, ILO.
- "Guidance on risk assessment at work", European Commission, Directorate-General V Employment, Industrial relations and social affairs.