RISK ASSESSMENT MATRIX

HAZARD CONSEQUENCE CRITERIA					PROBABILITY CRITERIA				
INCREASING SEVERITY SCORE (CONSEQUENCE) ⇨	TYPES OF IMPACT				INCREASING PROBABILITY SCORE ⇨				
SCORE	HUMAN HEALTH & SAFETY (GENERIC)	ENVIRONMENT	FINANCIAL	PUBLIC PERCEPTION	1	2	3	4	5
0	None (No toxic, harmful, corrosive, irritant or asphyxiant effects) (Chemicals: ACGIH A5 carcinogens. Those with no OEL's.)	-	-	-	VL (0)	VL (0)	VL (0)	VL (0)	VL (0)
1	Minor Injuries. (No lost time) Or Reversible Health Effects (eg. awkward posture) Chemicals: CONTROL BAND 1. - ACGIH A4 & IARC 3. - irritants, defatting agents, mild skin sensitisers - OEL >50 PPM ; OEL >1 mg/m3.	Local Off-Site Effects, Reversible (<6mnths)	Loss < R100'000	Local	VL (1)	VL (2)	L (3)	L (4)	M (5)
2	Moderate Injuries (Lost Time) Or Reversible Significant Health Effects (eg. repetitive tasks (WRULDs), Heat stress) Chemicals: CONTROL BAND 2. - ACGIH A3 & IARC 2B - severe dermatitis, reversible organ effects - OEL 5 - 50 PPM; OEL 0.1-1mg/m3 (dust)	Locally Significant Long-Term Effect (Reversible In >6mnths) Or Regionally Significant Effect, (Reversible In <6mnths)	Loss R100'000-R1m	City	VL (2)	L (4)	M (6)	M (8)	M (10)
3	Single Major Injury (Hosp) Or Multiple Disabling Injuries Or Irreversible Significant Health Effects (eg. Noise, poor manual handling) Chemicals: CONTROL BAND 3. - ACGIH A2 IARC 2A - irreversible organ effects (eg. lung fibrosis), respiratory sensitisers, (eg asthma) - OEL 0.5 - 4.9 PPM; OEL< 0.01mg/m3 (dust)	Regionally Significant Long-Term Effect (Reversible In >6mnths)	Loss R1m - R10m	Region	L (3)	M (6)	M (9)	M (12)	H (15)
4	Multiple Major Injuries / Disabilities Or Life-threatening Health Effects. (eg. Ionizing radiat'n, heat stroke, avian flu). Chemicals: CONTROL BAND 4. - ACGIH A1 & IARC 1 - Potent respiratory sensitizers (ie at low exposures) - OEL <0.5 PPM; OEL <0.01 mg/m3	National Significant Reversible Effect (>1year)	Loss R10m - R100m	National	L (4)	M (8)	H (12)	H (16)	VH (20)
5	Multiple Fatalities Or Extreme Health Hazard. Chemicals: CONTROL BAND 5. - ACGIH A1 & IARC 1. - Mutagens, Teratogens. - OEL <0.5 PPM; OEL <0.01 mg/m3 (dust)	Internationally Significant Effect (Irreversible)	Loss > R100m.	International	M (5)	H (10)	H (15)	VH (20)	VH (25)

NOTES:

RISK = CONSEQUENCES X PROBABILITY (or EXPOSURE) (OUT OF 25)

Use "**LIKELIHOOD**" in Phase One of HRA (Hazard Identification).

Use "**EXPOSURE SCORE**" (Freq x Duration x Intensity)/3 in Phase Two of HRA.(Detailed HRA).

Use **MEASURED TWA** instead of "Exposure Score", if the value has been measured.

LIKELIHOOD.	Unlikely Ever.	1 Incident / 10Yrs	1 Incident / Year	1 Incident / Month	1 Incident / Week
EXPOSURE FREQUENCY	Once /Year.	Quarterly.	Monthly	Weekly	Daily
EXPOSURE DURATION	< 1 Hours / Week (<10%)	1-5 Hours / Week (10%)	5-19 Hours / Week (10-50%)	20-40 Hours / Week (50-100%)	>40 Hours / Week (>100%)
EXPOSURE INTENSITY	(Enclosed/ Sealed Process)	(Manual Work With Local Exhaust)	(Semi-Enclosed Process)	(Manual Application, Protected (PPE),Safe Work Practices)	(Manual Application, Unprotected)
MEASURED TWA EXPOSURE (Where known)	As Per Table, Or < 50% Of Prescribed Limits	As Per Table, Or 50-75% Of Prescribed Limits	As Per Table, Or 75-100% Of Prescribed Limits	As Per Table, Or 101-200% Of Prescribed Limits	As Per Table, Or >200% Of Prescribed Limits

Scoring "Exposure" Intensity: Guidelines for Physical & Environmental Hazards (when measurements are known)

Note: The column colours are specifically set to indicate the following: pale blue = below the legal limit; yellow = just over the legal limit; orange = well over the legal limit.

HAZARD	1 (Low)	2 (Med)	3 (High)	4 (V-High)	5 (Extreme)	Aggravating Factors
Noise	75-79dB(A) (TWA – 8hrs)	80 – 84.9dB(A) (TWA – 8hrs)	85 – 95dB(A) (TWA – 8hrs)	96 – 105dB(A) (TWA – 8hrs)	over 105dB(A) (TWA – 8hrs)	Percussion / Impact Noise
Heat	WBGT index exceeds 25.	WBGT index exceeds 27.5.	WBGT index exceeds 30.0.	WBGT index exceeds 32.5.	WBGT index exceeds 35.0.	Heavy work rates
Cold	Dry bulb temp +5 to 0°C (OEL = no limit)	Dry bulb temp 0 to –18°C (OEL = no limit)	Dry bulb temp –18 to –34°C (OEL = 50 min / hour)	Dry bulb temp –34 to –57°C (OEL = 60min / day)	Dry bulb temp < –57°C (OEL = 5min / 8hr period)	Wetness, wind, lack of cover.
Glare	Mild degree of glare Eg. Reflected light from computer screen, indoors.	Mod degree of glare Eg. Reflected bright sunlight, outside.	Severe degree of glare Eg. Furnaces, welding			UV and/or infrared light
Vibration (Segmental)	50-75% of prescribed limits (TLV) Low amplitude, high frequency (>2kHz) Eg. Hand-held electric percussion drill.	75-100% of prescribed limits (TLV) Moderate amplitude, moderate frequency (1-2kHz)	101-150% of prescribed limits (TLV) High amplitude, low frequency (<1kHz) Eg. Pneumatic drilling machine.	150 - 200% of prescribed limits (TLV)	>200% of prescribed limits (TLV)	Cold exposure.
Vibration (Whole body)	50-75% of prescribed limits (TLV) Low amplitude, high frequency (>2kHz) Eg. Electric motors.	75-100% of prescribed limits (TLV) Moderate amplitude, moderate frequency (1-2kHz) Eg. Diesel engines.	101-150% of prescribed limits (TLV) High amplitude, low frequency (<1kHz) Eg. Vibrating platform on a rig.	150 - 200% of prescribed limits (TLV)	>200% of prescribed limits (TLV)	
Hazardous Chemical Substances	50-75% of OEL.	75-100% of OEL	100-150% of OEL	150-200% of OEL	>200% of OEL	
Radiation (Ionising)	<10% of prescribed limits	10-30% of prescribed limits	30-50% of prescribed limits	50-100% of prescribed limits (limit = **5mSv/year**)	>100% of prescribed limits	
Radiation (Non-ionising)	<10% of prescribed limits	10-30% of prescribed limits	30-50% of prescribed limits	50-100% of prescribed limits	>100% of prescribed limits	
Ergonomic	Low demand (Work rate/rest periods)	Moderate demand (Work rate/rest periods)	Moderate – High demand (Work rate/rest periods)	High demand (Work rate/rest periods)	Extreme demand (Work rate/rest periods)	

*: *The "TLV" (Threshold Limit Value) is quoted here because these limits are published by the American Conference of Governmental Hygienists (ACGH), and are easily available in the ACGIH publications. South African Standards ("OEL's") are to be used as these are gazetted.*

Notes to "Intensity":
This information is fairly technical in nature. It is usually measured by experts and presented to the company in reports (Approved Inspection Authority). Generally, this information is expressed relative to the statutory OEL's (when available). Note: OEL = Occupational Exposure Limit. When no local OEL is available, an internationally accepted alternative standard, such as the ACGIH standard ("TLV") can be used.

The presence of "aggravating factors" is a warning to the scorer to choose a value higher than the one indicated by the column.