




## SILICA PROGRAM – APPENDIX A - EXPOSURE ASSESSMENT DATABASE

Task	(Job-task Specific)  Potential Exposure Range (**)	WITHOUT CONTROLS Required Respiratory Protection	Recommended Engineering Control	WITH CONTROLS Required Respiratory Protection	Other Hazards Potentially Present	Other Information
<b>Abrasive Sandblasting</b>	Always exceeds OSHA PEL	Type CE	Substitution: Alternative blast media	Type CE	Noise (105-125 dBA) Metals dusts	<b>Alternatives:</b> <a href="http://www.osha.gov/SLTC/etools/silica/protect_against/stopsandblasters/stopsandblasters.html">http://www.osha.gov/SLTC/etools/silica/protect_against/stopsandblasters/stopsandblasters.html</a>
<b>Angle grinding – concrete (dry)</b> (handheld tools)	7.6 – 10.9 x OSHA PEL	Full-face tight-fitting respirator with particulate filters <b>OR</b>  PAPR <b>OR</b>  Supplied Air	Vacuum exhausted handtools (i.e. Hilti HG500D with VCD50 vacuum); improved cross-draft general ventilation; use of a dust containment system	N95 or P95 particulate respirator	Noise (90 – 108) dBA); downwind exposures; flying particles	Examples of high-velocity industrial blower with dust containment systems can be viewed at: <a href="http://www.icscompany.net/confided_space_ventilation_system">http://www.icscompany.net/confided_space_ventilation_system</a>  <a href="http://www.tempest-edge.com/blowers/accessories.htm">http://www.tempest-edge.com/blowers/accessories.htm</a>  Consider downwind exposures for other employees when using increased general ventilation.
<b>Cement/grout mixing</b>	1.29 – 1.56 x OSHA PEL	N95 or P95 particulate respirator	Cross draft ventilation; improved work practices (timing of bag opening)	N95 or P95 particulate respirator	Skin contact; ergonomic challenges (lifting/twisting)	Mounting a small fan to the mixing machine rim to blow dusts (released when the bag is ripped open)
<b>Chipping Hammer – on concrete (dry)</b>	2.0 – 10.0 x OSHA PEL	N95 or P95 particulate respirator	Wet methods; increased general ventilation  *GFCI protection when tool operated with water	N95 or P95 particulate respirator	Noise; vibration; ergonomic challenges	 Water attachment

\*PEL's derived from similar activities

\*\*BCCI policy is exposure levels 5X PEL or less require N95, between 5 – 10X PEL requires tight fitting ½ face piece



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<b>Cutting – Groove cutting with circular saw</b> (concrete) (dry)	<b>15.0 – 35 x</b> OSHA PEL	Full-face tight-fitting respirator with particulate filters <b>OR</b>  PAPR <b>OR</b>  Supplied Air	Vacuum/local ventilation (via additional machine retrofits or additional employee assistance; see photo) <b>OR</b> Wet cutting *GFCI protection when tool operated with water	N95 or P95 particulate respirator	Noise (>95 dBA); machine guarding issues; ergonomics; downwind exposures	 <p>Vacuum placement at end of cut</p>
<b>Cutting – Pile caps</b> (concrete) (dry)	<b>14.45 – 58.9 x</b> OSHA PEL	Supplied air	a) apply steady stream of water directly to the blade cutting surface (this must be done correctly and consistently in order to achieve reduction in exposure)  b) local exhaust ventilation	N95 or P95 particulate respirator  (limit duration of task times)	Noise (92 – 100 dBA); carbon monoxide exposure; ergonomic challenges	 <p>Water nozzle from hand pump</p> <p>Single, steady stream of water applied to blade surface</p>

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<b>Demolition – Sawing</b> (concrete)(dry)	10 – 35 x OSHA PEL	Full-face tight-fitting respirator with particulate filters <b>OR</b>  PAPR <b>OR</b>  Supplied Air	Wet cutting; Vacuum exhaust  *GFCI protection when tool operated with water	N95 or P95 particulate respirator	Noise; machine guarding issues	
<b>Demolition – Pile cap</b> (concrete)(dry) (w/ jackhammers)	3.86 – 15.0 x OSHA PEL	Full-face tight-fitting respirator with particulate filters <b>OR</b>  PAPR <b>OR</b>  Supplied Air	Apply water directly to chipping site	N95 or P95 particulate respirator  (limit duration of task times)	Noise (90 dBA); ergonomic challenges; vibration; flying particles	

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<b>Flat surface grinding</b> (concrete)(dry) (electric handheld tools)	9.5 – 18.5 x OSHA PEL	Full-face tight-fitting respirator with particulate filters <b>OR</b>  PAPR <b>OR</b>  Supplied Air	Vacuum exhausted handtools (i.e. Bosch ventilated hand grinder) – must be used consistently and correctly to achieve reduction in dust exposure	N95 or P95 particulate respirator	Noise (>90 dBA); downwind exposures; flying particles	 <p>Vacuum attachment; see ventilated face</p>
<b>Jackhammering / Chipping floors</b> (concrete)(dry)	1.5 – 3.3 x OSHA PEL	N95 or P95 particulate respirator	Wet methods; improved cross-draft general ventilation *GFCI protection when tool operated with water	N95 or P95 particulate respirator	Noise (96 – 102 dBA); vibration; downwind exposures	Examples of high-velocity industrial blower with dust containment systems can be viewed at: <a href="http://www.icscompany.net/confided_space_ventilation_syst.htm">http://www.icscompany.net/confided_space_ventilation_syst.htm</a> Consider downwind exposures for other employees when using increased general ventilation.
<b>Using Rotary Hammers or Drills</b>		N95	Use drill equipped with hood or cowl and HEPA filtered dust collector. Eliminate lowing or dry sweeping debris from work surface	N95	Eye and face, noise, wrist (re: drill spin)	

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<b>Bushing concrete - overhead</b>	6 – 15 x PEL	PAPR	None	None	Eye and Face	PAPR includes this protection
<b>Bushing concrete - other</b>	2 – 10 x PEL	Tight fitting ½ face	Box fan or other increased ventilation	None	Eye and Face	Faceshield
<b>Ceiling grinding</b>	6 – 15 x PEL	Tight fitting ½ face or PAPR	Use dustless grinder	N95 plus faceshield	Eye and Face	PAPR or faceshield
<b>Floor grinding</b>						
<b>Dry Sweeping</b> (trailers or slabs with visible dust accumulation)	4.5 x PEL	N95	Sweeping compound or equivalent	None		
<b>Dry Sawcutting</b> (with walk behind)	10 – 35 x PEL	PAPR <b>OR</b> supplied air	Dust collection or wet cutting	None	Noise	

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