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## APPENDIX 4-A1

### RECOMMENDATIONS FOR MIS FIELD PRESERVATION OR LABORATORY SUBSAMPLING BASED ON OVERALL CHEMICAL STABILITY

#### VOLATILE CHEMICALS REQUIRING FIELD PRESERVATION OF SOIL SAMPLE INCREMENTS

CHEMICAL PARAMETER	<sup>1</sup> Physical State		Molecular Weight	<sup>2</sup> Vapor Pressure mm Hg (25C)	Henry's Law Constant (H) (atm-m <sup>3</sup> /mol)
<b>VOLATILE CHEMICALS</b>					
<b>Preserve Samples in Methanol in the Field (or approved alternative, see text)</b>					
<b>(VP&gt;1 AND Molecular Weight &lt;200)</b>					
ACETONE	V	L	58	2.3E+02	3.9E-05
BENZENE	V	L	78	9.5E+01	5.61E-03
BIS(2- CHLOROETHYL)ETHER	V	L	143	1.6E+00	1.7E-05
BROMODICHLOROMETHANE	V	L	164	5.0E+01	2.1E-03
BROMOFORM	V	S	253	5.4E+00	5.4E-04
BROMOMETHANE	V	G	95	1.6E+03	6.3E-03
CARBON TETRACHLORIDE	V	L	154	1.2E+02	2.7E-02
CHLOROBENZENE	V	L	113	1.2E+01	3.2E-03
CHLOROETHANE	V	G	65	1.0E+03	1.1E-02
CHLOROFORM	V	L	119	2.0E+02	3.7E-03

CHLOROMETHANE	V	G	50	4.3E+03	8.8E-03
CHLOROPHENOL, 2-	V	L	129	2.5E+00	1.1E-05
DIBROMOCHLOROMETHANE	V	S	208	5.5E+00	7.8E-04
DIBROMOETHANE, 1,2-	V	S	188	1.1E+01	6.6E-04
DICHLOROBENZENE, 1,2-	V	L	147	1.4E+00	1.9E-03
DICHLOROBENZENE, 1,3-	V	L	147	2.2E+00	1.9E-03
DICHLOROBENZENE, 1,4-	V	S	147	1.7E+00	2.4E-03
DICHLOROETHANE, 1,1-	V	L	99	2.3E+02	5.6E-03
DICHLOROETHANE, 1,2-	V	L	99	7.9E+01	1.2E-03
DICHLOROETHYLENE, 1,1-	V	L	97	6.0E+02	2.7E-02
DICHLOROETHYLENE, Cis 1,2-	V	L	97	2.0E+02	4.1E-03
DICHLOROETHYLENE, Trans 1,2-	V	L	97	3.3E+02	9.3E-03
DICHLOROPROPANE, 1,2-	V	L	113	5.3E+01	2.9E-03
DICHLOROPROPENE, 1,3-	V	L	111	3.4E+01	3.7E-03
DIOXANE, 1,4-	V	L	88	3.8E+01	4.9E-06
ETHANOL	V	L	46	5.9E+01	6.3E-06
ETHYLBENZENE	V	L	106	9.6E+00	7.8E-03
METHYL ETHYL KETONE	V	L	72	9.1E+01	5.6E-05
METHYL ISOBUTYL KETONE	V	L	100	2.0E+01	1.4E-04
METHYL TERT BUTYL ETHER	V	L	88	2.5E+02	5.9E-04
METHYLENE CHLORIDE	V	L	85	4.4E+02	3.2E-03
STYRENE	V	L	104	6.4E+00	2.7E-03
tert-BUTYL ALCOHOL	V	L	74	4.1E+01	1.2E-05
TETRACHLOROETHANE,	V	L	168	4.6E+00	2.4E-03

1,1,1,2-					
TETRACHLOROETHANE, 1,1,2,2-	V	L	168	4.6E+00	3.7E-04
TETRACHLOROETHYLENE	V	L	166	1.9E+01	1.8E-02
TOLUENE	V	L	92	2.8E+01	6.6E-03
TPH (gasolines)	V	L	108	6.8E+02	7.2E-04
TRICHLOROETHANE, 1,1,1-	V	L	133	1.2E+02	1.7E-02
TRICHLOROETHANE, 1,1,2-	V	L	133	2.3E+01	8.3E-04
TRICHLOROETHYLENE	V	L	131	6.9E+01	9.8E-03
TRICHLOROPROPANE, 1,2,3-	V	L	147	3.7E+00	3.4E-04
TRICHLOROPROPENE, 1,2,3-	V	L	145	3.7E+00	2.8E-02
VINYL CHLORIDE	V	G	63	3.0E+03	2.7E-02
XYLENES	V	L	106	8.0E+00	7.1E-03

Reference: Appendix 1, Table H in HEER Office Environmental Hazard Evaluation guidance ([HDOH, 2016](#)).

1. Physical state of chemical at ambient conditions (V – volatile, SV – Semi-Volatile (\*SV – Treated as “volatile” in USEPA risk assessment models if  $H > 0.00001$ ), S – solid, L – liquid, G – gas).
2. Vapor Pressures from National Library of Medicine TOXNET or ChemID databases.
3. Check with lab to determine feasibility of wet sieving sample to remove >2mm particles prior to subsampling.
4. Soil or sediment samples that consist entirely of <2mm material *do not* require drying and sieving to address fundamental error concerns, although some degree of drying and sieving may be desirable by the laboratory for testing purposes.