

Table 3.4.1 J: Assessment Summary – Alternatives for Lead Ammunition/ Shooting Ranges

Assessment Criteria		Lead (Reference)	Comparison Relative to Lead				
			Bismuth	Copper	Iron	Tungsten	Zinc
Technical/ Performance Criteria	Density	11.34 g/cm ³	-	-	-	+	-
	Frangibility	No	+	+	+	+	?
	Barrel Wear	Good	=	=	=	?	=
Environmental Criteria	Primary Drinking Water Standards (MCL Action Level)	15 µg/L	?	+	+	?	?
	Aquatic Toxicity: Water Quality Criteria (CMC)						
	Freshwater Saltwater	65 µg/L 210 µg/L	? ?	- -	+ +	? ?	+ -
Human Health Criteria	Occupational Exposure: REL (8-hour TWA)	0.050 mg/m ³	?	+	+	+	+
	Carcinogenicity	EPA B2 IARC 2B	+	+	+	+	+
	Developmental Toxicity	Yes (Prop 65)	+	+	+	+	+
Cost	Cost/9mm round	\$0.14-\$0.20	-	-	-	-	-
	Operating Costs	High	+	+	+	+	+

COMPARISON KEY							
+	Better	=	Similar	-	Worse	?	Unknown