The following list represents the results of my review of published research and literature. I'm sharing it with the intention of encouraging others to consider using these species for projects located in or near **industrial areas**, **tanneries**, **smelting operations**, **agricultural areas**, and other locations where remediation of soils contaminated with heavy metals is desired.

A **hyperaccumulator** species is a plant species that can absorb an extremely high level of a specific metal from the soil into their tissues.

An **accumulator** species can also absorb specific metals from the soil into their tissues, but in lesser quantities than hyperaccumulators. However, accumulators that have a high growth rate and/or produce large quantities of biomass can be just as effective in remediating soil contaminated with heavy metals as hyperaccumulators.

In order for these species to effectively remediate soils contaminated with heavy metals, the plants must be harvested after an adequate period of growth that allows them to accumulate the metal contaminants in sufficient quantities, and then removed and disposed of in a manner that is in accordance with local, state, and/or federal environmental laws and regulations.

NATIVE SPECIES FOR PHYTOREMEDIATION OF CADMIUM (Cd)					
Common Name	**Scientific Name**	**Vegetation Type**	**Sunlight requirements**	**Soil moisture requirements**	**Accumulation Quantity**
Common Yarrow	*Achillea millefolium*	Forb	Full sun	Dry to medium	Accumulator
Fox sedge	*Carex vulpinoidea*	Sedge	Full sun to part shade	Wet	Accumulator
Canadian Horseweed	*Conyza canadensis*	Forb	Full sun	Dry to medium	Accumulator
Pondweed	*Elodea canadensis*	Aquatic	Full sun	Inundation	Accumulator
Dogfennel	*Eupatorium capillifolium*	Forb	Full sun to part shade	Medium	Accumulator
Common Sunflower	*Helianthus annuus*	Forb	Full sun	Dry to medium	Accumulator
Jerusalem Artichoke	*Helianthus tuberosus*	Forb	Full sun to part shade	Dry to medium	Accumulator

Deciduous holly	*Ilex decidua*	Tree	Full sun to part shade	Medium	Accumulator
American holly	*Ilex opaca*	Tree	Full sun to part shade	Medium	Accumulator
Switchgrass	*Panicum virgatum*	Grass	Full sun to part shade	Medium to wet	Hyperaccumulator
Coastal plain willow	*Salix caroliniana*	Tree	Full sun to part shade	Medium to wet	Accumulator
Heart-leaved willow	*Salix eriocephala*	Tree	Full sun to part shade	Medium to wet	Accumulator
Sand willow	*Salix interior*	Tree	Full sun to part shade	Medium to wet	Accumulator
Prairie willow	*Salix humilis*	Tree	Full sun to part shade	Medium	Accumulator
Black Willow	*Salix nigra*	Tree	Full sun to part shade	Medium to wet	Accumulator
Prairie Cordgrass	*Spartina pectinata*	Grass	Full sun to part shade	Medium to wet	N/A
Giant duckweed	*Spirodela polyrhiza*	Aquatic	Full sun to part shade	Inundation	Accumulator
Johnny jump up	*Viola bicolor*	Forb	Full sun to part shade	Dry to medium	Accumulator
Bog white violet	*Viola lanceolata*	Forb	Full sun	Wet	Accumulator
Missouri violet	*Viola missouriensis*	Forb	Full shade to part shade	Medium	Accumulator
Northern bog violet	*Viola nephrophylla*	Forb	Part shade to full shade	Wet	Accumulator
Three lobed violet	*Viola palmata*	Forb	Part shade to full shade	Medium	Accumulator
Bird’s foot violet	*Viola pedata*	Forb	Full sun	Dry to medium	Accumulator
Smooth yellow violet	*Viola pubescens*	Forb	Part shade to full shade	Dry	Accumulator

Arrow-leaved violet	*Viola sagittata*	Forb	Full sun to part shade	Dry to medium	Accumulator
Common blue violet	*Viola sororia*	Forb	Full sun to part shade	Medium	Accumulator
Striped cream violet	*Viola striata*	Forb	Part shade	Medium to wet	Accumulator
Palmate-leaved violet	*Viola subsinuata*	Forb	Part shade	Dry to medium	Accumulator
Carolina violet	*Viola villosa*	Forb	Part shade	Dry	Accumulator

NATIVE SPECIES FOR PHYTOREMEDIATION OF CHROMIUM (Cr)					
Common Name	**Scientific Name**	**Vegetation Type**	**Sunlight requirements**	**Soil moisture requirements**	**Accumulation Quantity**
Duckweed	*Lemna minor*	Aquatic	Full sun to part shade	Inundation	Accumulator
American water-lily	*Nymphaea odorata*	Acquatic	Full sun	Inundation	Accumulator
Pale Smartweed	*Persicaria lapathifolia*	Forb	Full sun to part shade	Medium	Hyperaccumulator
Coastal plain willow	*Salix caroliniana*	Tree	Full sun to part shade	Medium to wet	Accumulator
Heart-leaved willow	*Salix eriocephala*	Tree	Full sun to part shade	Medium to wet	Accumulator
Sand willow	*Salix interior*	Tree	Full sun to part shade	Medium to wet	Accumulator
Prairie willow	*Salix humilis*	Tree	Full sun to part shade	Medium	Accumulator
Black Willow	*Salix nigra*	Tree	Full sun to part shade	Medium to wet	Accumulator

NATIVE SPECIES FOR PHYTOREMEDIATION OF COPPER (Cu)					
Common Name	**Scientific Name**	**Vegetation Type**	**Sunlight requirements**	**Soil moisture requirements**	**Accumulation Quantity**
False Indigo Bush	*Amorpha fruticosa*	Shrub	Full sun	Medium to wet	Accumulator
Big Bluestem	*Andropogon gerardii*	Forb	Full sun	Dry to medium	Accumulator
Sideoats Grama	*Bouteloua curtipendula*	Grass	Full sun	Dry to medium	Accumulator
Fox Sedge	*Carex vulpinoidea*	Sedge	Full sun to part shade	Wet	Accumulator
Pondweed	*Elodea canadensis*	Aquatic	Full sun	Inundation	Accumulator
Common sunflower	*Helianthus annuus*	Forb	Full sun	Dry to medium	Accumulator
Common duckweed	*Lemna minor*	Herbaceous	Full sun to part shade	Inundation	Accumulator
American Water-lily	*Nymphaea odorata*	Aquatic	Full sun	Inundation	Accumulator
Pale Smartweed	*Persicaria lapathifolia*	Forb	Full sun to part shade	Medium	Hyperaccumulator
Coastal plain willow	*Salix caroliniana*	Tree	Full sun to part shade	Medium to wet	Accumulator
Heart-leaved willow	*Salix eriocephala*	Tree	Full sun to part shade	Medium to wet	Accumulator
Sand willow	*Salix interior*	Tree	Full sun to part shade	Medium to wet	Accumulator
Prairie willow	*Salix humilis*	Tree	Full sun to part shade	Medium	Accumulator
Black Willow	*Salix nigra*	Tree	Full sun to part shade	Medium to wet	Accumulator
Little Bluestem	*Schizachyrium scoparium*	Grass	Full sun	Dry to medium	Accumulator
Prairie Cordgrass	*Spartina pectinata*	Grass	Full sun to part shade	Medium to wet	N/A

NATIVE SPECIES FOR PHYTOREMEDIATION OF LEAD (Pb)					
Common Name	**Scientific Name**	**Vegetation Type**	**Sunlight requirements**	**Soil moisture requirements**	**Accumulation Quantity**
Annual Ragweed	*Ambrosia artemisiifolia*	Forb	Full sun to part shade	Dry to medium	Hyperaccumulator
Leadplant	*Amorpha fruticosa*	Shrub	Full sun	Medium to wet	Accumulator
Sideoats Grama	*Bouteloua curtipendula*	Grass	Full sun	Dry to medium	Accumulator
Fox sedge	*Carex vulpinoidea*	Sedge	Full sun to part shade	Wet	Accumulator
Pondweed	*Elodea canadensis*	Aquatic	Full sun	Inundation	Accumulator
Honey locust	*Gleditsia triacanthos*	Tree	Full sun	Medium	N/A
Duckweed	*Lemna minor*	Aquatic	Full sun to part shade	Inundation	Accumulator
Pale Smartweed	*Persicaria lapathifolia*	Forb	Full sun to part shade	Medium	Hyperaccumulator
Switchgrass	*Panicum virgatum*	Grass	Full sun to part shade	Medium to wet	Hyperaccumulator
Eastern gamagrass	*Tripsacum dactyloides*	Grass	Full sun to part shade	Medium	Accumulator
Broadleaf Cattail	*Typha latifolia*	Grass	Full sun	Wet	Hyperaccumulator

NATIVE SPECIES FOR PHYTOREMEDIATION OF NICKEL (Ni)					
Common Name	**Scientific Name**	**Vegetation Type**	**Sunlight requirements**	**Soil moisture requirements**	**Accumulation Quantity**
Canadian horseweed	*Conyza canadensis*	Forb	Full sun	Dry to medium	Accumulator
Dogfennel	*Eupatorium capilifolium*	Forb	Full sun to part shade	Medium	Accumulator
Common sunflower	*Helianthus annuus*	Forb	Full sun	Dry to medium	Accumulator
Duckweed	*Lemna minor*	Aquatic	Full sun to part shade	Inundation	Accumulator
Black locust	*Robinia pseudoacacia*	Tree	Full sun	Dry to medium	Hyperaccumulator
Coastal plain willow	*Salix caroliniana*	Tree	Full sun to part shade	Medium to wet	Accumulator
Heart-leaved willow	*Salix eriocephala*	Tree	Full sun to part shade	Medium to wet	Accumulator
Sand willow	*Salix interior*	Tree	Full sun to part shade	Medium to wet	Accumulator
Prairie willow	*Salix humilis*	Tree	Full sun to part shade	Medium	Accumulator
Black Willow	*Salix nigra*	Tree	Full sun to part shade	Medium to wet	Accumulator
Balsam groundsel	*Packera pauperculus*	Forb	Full sun to part shade	Medium	Hyperaccumulator
Hairy goldenrod	*Solidago hispida*	Forb	Full sun	Dry to medium	Hyperaccumulator

NATIVE SPECIES FOR PHYTOREMEDIATION OF ZINC (Zn)					
Common Name	**Scientific Name**	**Vegetation Type**	**Sunlight requirements**	**Soil moisture requirements**	**Accumulation Quantity**
Sideoats Grama	*Bouteloua curtipendula*	Grass	Full sun	Dry to medium	Accumulator
Canadian Horseweed	*Conyza canadensis*	Forb	Full sun	Dry to medium	Accumulator
Common Sunflower	*Helianthus annuus*	Forb	Full sun	Dry to medium	Accumulator
Coastal plain willow	*Salix caroliniana*	Tree	Full sun to part shade	Medium to wet	Accumulator
Heart-leaved willow	*Salix eriocephala*	Tree	Full sun to part shade	Medium to wet	Accumulator
Sand willow	*Salix interior*	Tree	Full sun to part shade	Medium to wet	Accumulator
Prairie willow	*Salix humilis*	Tree	Full sun to part shade	Medium	Accumulator
Black Willow	*Salix nigra*	Tree	Full sun to part shade	Medium to wet	Accumulator
Eastern gamagrass	*Tripsacum dactyloides*	Grass	Full sun to part shade	Medium	Accumulator