The MEND Treatment Technology Research Program

by

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The MEND Treatment program was initially focussed on passive systems development and about $1 million, as shown in Table 1, was spent on passive treatment projects. With the results of these projects and the results of extensive work in the United States on passive systems, it was determined that no additional work could be justified. Passive treatment methods have "niche" applications only in Canada.

The focus of the Treatment committee was switched to chemical treatment systems, principally lime treatment. Of some concern in some areas is the long term stability of lime treatment sludges and the retention of precipitated metals in these sludges. Both selective precipitation and ion exchange were examined in laboratory-scale tests for heavy metals removal complete acid neutralization with lime. Both methods were technically successful but the economics were unattractive so additional work on a pilot scale was not undertaken.

The final projects (1995-1997), as shown in Table 3, will include a small "New Ideas" project on sulphide passivation and a two projects on lime sludge disposal.

In summary MEND concludes that passive treatment will see limited use in Canada and lime treatment will be the method used at most mine sites to treat acidic waters. Sludge stabilization and disposal are the remaining issues requiring further work.

TABLE 1

MEND TREATMENT PROJECTS - Passive

		($)
Complete		
3.11.1	Treatment of Acidic Seeps Employing Wetland Ecology and Microbiology - 1988-93	759k
3.12.1a	Assessment of Existing Natural Wetlands Affected by Low pH, Metal Contaminated Seepages - 1990	40k
3.12.2	Evaluation of Wetlands at the Panel Dam "A" Site	45k
3.13.1a	Treatment of Small Seeps	90k
3.14.1	Review of Passive Systems for Treatment of AMD	60k
Active		
3.41.1a	In Situ Treatment of AMD	41k
		Total $994k

TABLE 2

MEND TREATMENT PROJECTS - Chemical

Complete

3.21.1a	Metals Recovery from Acid Mine Drainage - Review	25k
3.21.2a	Metals Removal from Acid Mine Drainage - Chemical	90k
3.21.1b	Metals Removal from Acid Mine Drainage - Ion Exchange	64k
3.22.1	Survey of Acid Mine Drainage Characteristics	15k
3.32.1	Lime Treatment - Review and Sludge Stabilization	60k

Cancelled

3.31	Use of Lime Sludges for Capping	30k
3.21.3	Removal of Metals from AMD - Pilot Tests	125k

Total Spent $254

TABLE 3

MEND TREATMENT PROJECTS

Recommendations for 1995 - Final Projects	$
Passivation of Sulphides	20K
Lime Sludge Use in Closure Scenarios	35k
Lime Sludge Stabilization - Methods and Protocols	90k
	Total $145K

TABLE 4

MEND TREATMENT PROJECTS

Associate Projects

Field Evaluation of Acid Mine Water Treatment Using Constructed Wetlands at the Halifax Airport
Constructed Wetland at Noranda Bell Mine
Treatment of Acidic Seepage Using Chinese Alders
Use of Lime Sludge to Develop Cover on Coal Mine Wastes

TABLE 5

TREATMENT of ACIDIC DRAINAGE

Results:

- **Passive treatment limited use in Canada**
- **Lime treatment principal method**
- **Lime sludge stabilization and disposal remaining issues**