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TRACE MERCURY ANALYSIS OF 79 SAMPLES
OF CANADIAN COALS
(PRELIMINARY REPORT)

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by
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Introduction

In response to a request from W.A. Lemmon, Environment Canada, for information on trace elements in Canadian coals a program was undertaken to determine Mercury in selected coal samples taken as result of other projects in progress within the Energy Research Laboratories. Seventy-nine samples were selected to cover the main areas of interest to Environment Canada. It is proposed that all Canadian coal producing areas will be covered in the near future and will include other trace elements when the analytical techniques have been standardized.

Methods of Analysis

In brief the analytical procedure is the bomb combustion method followed by a flameless atomic absorption technique which will be described in detail at a later date.

Analytical Results

Tables I to VI present the analytical data by coal producing province, giving the as analysed values for Moisture and Ash in per cent and Mercury content in parts per million. Where high values occurred the analyses were repeated to confirm them.

Table	I	- Nova Scotia
Table	II	- New Brunswick
Table	III	- Saskatchewan
Table	IV	- Alberta
Table	V	- British Columbia
Table	VI	- Yukon Territory

Table I

Province: NOVA SCOTIA

Mine And/Or Area: CAPE BRETON DEVELOPMENT CORP.

Sample Number	Size or Designation	Moisture %	Ash %	Mercury ppm
2212-76	2" x 0 Nut Slack (Gagetown, N.B.)	1.13	10.94	0.18
2226-76	2" x 0 " " (" ")	0.86	9.63	0.17
2250-76	CARGO SAMPLE	0.69	8.49	0.19
2099-76	2" x 0 Power Plant Coal (Trenton) N.S.	0.91	20.94	0.21
2100-76	2" x 0 " " " (Trenton) N.S.	1.61	20.57	0.20

Mine And/Or Area: DRUMMOND COAL CO. LTD.

2095-76	+1½" □	0.92	21.02	0.10
2096-76	1½" x ¾" □	0.72	22.89	0.07
2097-76	¾" □ x 0	0.86	24.61	0.37 0.39
2098-76	¾" □ x 0	0.91	20.94	0.15

Mine And/Or Area: EVANS COAL MINES LIMITED

2086-76	Medium Lump	6" x 3¼" □	1.09	9.13	0.10
2087-76	Egg	3¼" x 2" □	1.06	10.85	0.10
2088-76	Nut	2" x ¾" □	1.39	14.63	0.09
2090-76	Stoker	¾" x ¼" Slot	1.16	12.31	0.12
2092-76	Fines	¼" x 0	1.33	14.29	0.10
2901-75	Medium Lump	6" x 3¼" □	3.64	7.42	0.12
2902-75	Egg	3¼" x 2" □	3.55	9.97	0.15
2903-75	Nut	2" x ¾" □	3.67	12.24	0.13
2904-75	Stoker Pea	¾" x ¼" □	3.61	13.10	0.14
2905-75	Fines	¼" x 0 Slot	4.07	17.11	0.11
4002-74	Med. Lump	6" x 3¼" □	3.19	7.54	0.10

Table I (continued)

Province: NOVA SCOTIA

Mine And/Or Area: EVANS COAL MINES LIMITED

Sample Number	Size or Designation	Moisture %	Ash %	Mercury ppm
4003-74	Egg 3 $\frac{1}{4}$ " x 2" □	2.75	10.46	0.12
4004-74	Nut 2" x 3/4" □	2.68	10.81	0.12
4005-74	Stoker Pea 3/4" □ x $\frac{1}{4}$ " Slot	2.52	11.18	0.11
4006-74	Fines $\frac{1}{4}$ " x 0	2.82	14.19	0.10

Mine And/Or Area: LINGAN - (DEVCO)

2906-75	Slack - 2" □	2.66	8.47	0.35
2907-75	Screen + 2" □	1.44	8.95	0.29
2908-75	Slack - 2" □	1.26	17.19	0.29
3994-74	Screened + 2" □	1.10	8.69	0.33
3995-74	Slack 2" □ x 0	1.32	9.81	0.26

Mine And/Or Area: POINT ACONI (DEVCO)

2858-74	Sample from Stripping Operations	5.18	7.32	0.17
2859-74	" " " "	4.59	15.42	0.14

Mine And/Or Area: PRINCESS (DEVCO) SYDNEY

3996-74	Egg + 1 3/4" ⊕	0.86	6.84	0.33
3997-74	Nut 1 3/4" x 3/4" ⊕	0.90	4.76	0.28
3998-74	Coarse Slack 1 3/4" ⊕ x 0	1.27	5.20	0.25
3999-74	Pea 3/4" x $\frac{1}{4}$ " ⊕	1.28	4.85	0.25
4000-74	Slack 3/4" ⊕ x 0	1.23	13.11	0.28
4001-74	Fines $\frac{1}{4}$ " ⊕ x 0	1.20	19.36	0.28

Table I (continued)

Province: NOVA SCOTIA

Mine And/Or Area: RIVER HEBERT COAL CO. LTD.

Sample Number	Size or Designation	Moisture %	Ash %	Mercury ppm
2101-76	- 1½" □	0.81	19.90	0.23
2102-76	- 1½" □	0.78	11.28	0.21
2103-76	+ 1½" □	0.86	9.83	0.20
2104-76	- 1½" □	0.80	17.81	0.19
2105-76	- 1½" □	0.79	18.27	0.19

Mine And/Or Area: THORBURN MINING LTD.

2082-76	Wash Plant	+ ¾" □	0.84	36.70	0.08
2083-76	" "	- ¾" □	0.99	27.98	0.07
2084-76	" "	- ¾" □	1.02	25.90	0.07
2085-76	" "	Raw Feed	1.01	51.73	0.03

Mine And/Or Area: #26 MINE (DEVCO) SYDNEY

2909-75	Screen	+ 2" □	0.82	9.78	0.50
2910-75	Pea	+ ¼" x 4 Slot	0.83	8.25	0.36
2911-75	Fines	- ¼" x 4 Slot	1.04	11.09	0.36
2900-75	Fines	- ¼" x 0	2.52	8.00	0.19
2896-75	Egg	+ ¾" ⊕	1.06	3.05	0.10
2897-75	Nut	1 ¾" x ¾"	1.04	3.12	0.14
2898-75	Co. Slack	1 ¾" x 0	1.04	3.35	0.12
2899-75	Pea	¾" x ¼"	1.12	3.35	0.13
3990-74	Run of Mine	4" □ x 0	1.05	7.76	0.15
3991-74	Pea	4" □ x ¼ Slot	0.95	4.74	0.14
3992-74	Slack	¾" □ x 0	1.06	7.44	0.11
3993-74	Fines		0.98	7.72	0.12

Table II

Province: NEW BRUNSWICK

Mine And/Or Area: KNOX CONSTRUCTION, NEW BRUNSWICK COAL LTD

Sample Number	Size or Designation	Moisture %	Ash %	Mercury ppm
2075-76	Run of Mine	0.62	13.55	0.22 0.22
2076-76	" " "	0.79	21.27	0.56 0.46

Mine And/Or Area: NB COAL LTD - MINTO

2064-76	Wash Plant + 2½" □	0.59	19.94	0.79 0.77
2065-76	" " Nut 2½ x ¾" □	0.56	17.08	0.38 0.36
3700-75	Heating Plant Coal ¼ x ¾	0.73	16.94	0.41
2071-76	Wash Plant Raw Feed	0.56	21.10	0.28
2067-76	" " Stoker ¾" x ¼"	0.76	14.36	0.28
2069-76	Fines ¼" x 0	1.45	22.45	0.38
2072-76	Clean Coal - Stoker Removed	0.78	23.74	0.62
2074-76	Power Plant Coal - Run of Mine	0.90	19.22	0.52
2073-76	Strip Pit " " "	0.93	18.57	0.37

Table III

Province: SASKATCHEWAN

Mine And/Or Area: WILLOW BUNCH - EAST POPLAR FIELD

Sample Number	Size or Designation	Moisture %	Ash %	Mercury ppm
3524-75	Combustion Trials	21.68	18.19	0.07
3525-75	" "	12.91	17.30	0.08
3526-75	" "	12.57	19.24	0.07

Table IV

Province: ALBERTA

Mine And/Or Area: LUSCAR

Sample Number		Moisture %	Ash %	Mercury ppm
3527-75	Combustion Trials	5.54	13.36	0.06

Table V

Province: BRITISH COLUMBIA

Mine And/Or Area: DOMINION COAL BLOCKS - CROWSNEST

Sample Number	Size or Designation	Moisture %	Ash %	Mercury ppm
2336-76	ADIT # 1 Upper 4 Seam	0.85	11.20	0.07
2339-76	ADIT # 2 Lower 4 Seam	0.58	20.78	0.05
2342-76	ADIT # 3 Lower 4 Seam	0.51	11.96	0.09
2345-76	ADIT # 6 5 Seam	0.15	17.84	0.52
2348-76	ADIT # 8 8 Seam	0.62	20.37	0.68
2349-76	ADIT # 13 7 Seam	0.59	16.40	0.09

Mine And/Or Area: HAT CREEK ASHCROFT

2593-76	Drill Core #1	15' - 18'	14.00	29.04	0.36
2594-76	" #3	23' - 28'	17.90	21.22	0.09
2595-76	" #3	45' - 50'	16.70	43.27	0.06
2596-76	" #3	59' - 64'	16.06	33.28	0.07
2597-76	" #4	28' - 33'	19.74	15.82	0.07
2598-76	" #6	60' - 65'	20.08	32.25	0.07
2599-76	" #6	75' - 79'	18.33	22.97	0.17
2600-76	" #9	75' - 80'	16.57	33.89	0.23
2601-76	" #9	89' - 94'	17.73	17.63	0.10

Table VI

Province: YUKON TERRITORY
Mine And/Or Area: CLIFF CREEK (SHELL CREEK)

Sample Number	Size or Designation	Moisture %	Ash %	Mercury ppm
2352-76	Exploration Sample	9.94	10.32	0.07
2353-76	" "	8.90	8.35	0.09
2354-76	" "	8.46	18.63	0.16