

**BIBLIOGRAPHY OF PUBLICATIONS CONTAINING MAJOR, MINOR, AND
TRACE ELEMENT DATA FROM THE NATIONAL COAL RESOURCES DATA SYSTEM**

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Introduction

In an effort to assess the quality of coal in the United States the U. S. Geological Survey has analyzed nearly 14,000 samples of coal and associated rocks. The methods used to analyze these samples are described in Swanson and Huffman (1976) and Golightly and Simon (1989). Since 1975 the analytical data has been stored in the National Coal Resources Data System (NCRDS). During the intervening 15 years several hundred reports have been published that were based on or contained analytical data from the NCRDS.

In this compilation we have focused on those publications which contain major, minor, and trace element data. More than 80 such publications have been identified. In the first part of this report we list the citations chronologically. This is followed by a tabulation of the number of published analyses for each state. Thus, this report provides a compilation convenient for locating published data on any state or coal region. It documents many of the publications derived from the U. S. Geological Survey's efforts to assess domestic coal quality, and it helps to identify analytical data contained in the NCRDS that have not been published.

We have included only those reports that are publicly available. Internal administrative reports and reports prepared for other government agencies have not been included. Moreover, we have included only those reports that contain comprehensive analytical data, excluding reports with partial analyses and those with only statistical summaries.

We have tried to identify analyses that appear in more than one publication. Undoubtedly there are others that we have not recognized, but we believe the number to be relatively small. This compilation indicates that less than half of the elemental data contained in the NCRDS have been published (6,240 out of 13,975); about three quarters of these were published prior to 1982.

References

- Golightly, D. W. and Simon, F. O., 1989, Methods for sampling and inorganic analysis of coal: U. S. Geological Survey Bulletin 1823, 72 p.
- Swanson, V. E. and Huffman, Jr., C., 1976, Guidelines for sample collecting and analytical methods used in the U. S. Geological Survey for determining chemical composition of coal: U. S. Geological Survey Circular 735, 11 p.

Chronological Listing of Publications

1974

U.S. Geological Survey and Montana Bureau of Mines and Geology, 1974, Preliminary report of coal drill-hole data and chemical analyses of coal beds in Campbell County, Wyoming: U. S. Geol. Survey Open-file Rept. 74-97, 241 p. [Wyoming - 111 samples]

1975

Glass, G. B., 1975, Analyses and measured section of 54 Wyoming coal samples (collected in 1974): Geological Survey of Wyoming Report of Investigations No. 11, 219 p. [Wyoming - 54 samples]

U.S. Bureau of Land Management, 1975a, Trace elements, in Otter Creek study site [Powder River County, Mont.] Resource and potential reclamation evaluation: U. S. Bur. Land Management [Denver, Colo.] EMRIA Rept. 1, p. 61-79. [Montana - 67 samples]

U. S. Bureau of Land Management, 1975b, Trace elements, in Hanna Basin study site [Carbon County, Wyo.] Resource and potential reclamation: U.S. Bur. Land Management [Denver, Colo.] EMRIA Rept. 2, p. 48-59. [Wyoming - 15 samples]

U. S. Bureau of Land Management, 1975c, Composition [of coal], in Alton study site [Kane County, Utah] Resource and potential reclamation evaluation: U. S. Bur. Land Management [Denver, Colo.] EMRIA Rept. 4, p. 75-82. [Utah - 8 samples]

1976

McKay, E. J. and Landis, E. R., 1976, Preliminary report on coal resources of the Otter Creek EMRIA site, Powder River County, Montana: U. S. Geological Survey Open-file Report 76-387, 49 p. [Montana - 67 samples]

Pillmore, C. L. and Hatch, J. R., 1976, Geochemical data on selected coal beds, Raton Coal Field, Colfax County, New Mexico: U. S. Geological Survey Open-file Report 76-542, 26 p. [New Mexico - 26 samples]

Struble, R. A., Collins, H. R., DeLong, R. M., 1976, Coal resources of a portion of the Pawpaw Creek watershed, Monroe, Noble, and Washington Counties: Ohio Division of Geological Survey Geological Note No. 4, 16 p. [Ohio - 5 samples]

Swanson, V.E., Medlin, J.H., Hatch, J.R., Coleman, S.L., Wood, G.H., Jr., Woodruff, S.D., Hildebrand, R.T., 1976, Collection, chemical analysis and evaluation of coal samples in 1975: U. S. Geological Survey Open-file Report 76-468, 503 p. [Twenty-eight states - 799 samples]

U.S. Geological Survey and Montana Bureau of Mines and Geology, 1976, Preliminary report of coal drill-hole data and chemical analyses of coal beds in Campbell and Sheridan Counties, Wyoming: Custer, Prairie, and Garfield Counties, Montana; and Mercer County, North Dakota: U. S. Geol. Survey Open-file Rept. 76-319, 377 p. [Wyoming - 15 samples; North Dakota - 4 samples]

Wedge, W. K., Bhatia, D. M. S., and Rueff, A. W., 1976, Chemical analyses of selected Missouri coals and some statistical implications: Missouri Department of Natural Resources, Geological Survey Report of Investigations 60, 40 p. [Missouri - 30 samples]

1977

Arizona Bureau of Mines, 1977, Chemical analyses of coal samples from the Black Mesa Field, Arizona: Arizona Bureau of Mines, Circular No. 18, 14 p. [Arizona - 7 samples]

Boreck, D. L., Jones, D. C., Murray, D. K., Schultz, J. E., and Suek, D. C., 1977, Colorado coal analyses, 1975: Analyses of 64 samples collected in 1975: Colorado Geological Survey Information Series No. 7, 112 p. [Colorado - 64 samples]

Hildebrand, R.T., and Hatch, J.R., 1977, Chemical analyses of lignite from the Sentinel Butte Member of the Fort Union Formation, Beulah Trench Study area, in U. S. Department of Interior, Beulah Trench Study area, Mercer County, North Dakota: EMRIA Report No. 10, Appendix D, 24 p. [North Dakota - 24 samples]

1978

Botoman, G. and Stith, D. A., 1978, Analyses of Ohio coals: Ohio Division of Geological Survey Information Circular No. 47, 148 p. [Ohio - 151 samples]

Culbertson, W.C., Hatch, J.R., and Affolter, R.H., 1978, Geology and coal resources of Hanging Woman Creek study area, Big Horn and Powder River Counties Montana: U. S. Geological Survey Open-file Report 78-506, 37p. [Montana - 13 samples]

Glass, G. B., 1978, Coal analyses and lithologic descriptions of five core holes drilled in the Carbon Basin of southcentral Wyoming: Wyoming Geological Survey Report of Investigation No. 16, 97 p. [Wyoming - 18 samples]

Hatch, J.R., and Affolter, R.H., 1978, Chemical analyses of lignite from the Sentinel Butte Member of the Fort Union Formation, Dunn Center field, Dunn County, North Dakota: U. S. Geological Survey Open-file Report 78-1078, 42 p. [North Dakota - 40 samples]

Hatch, J.R., Affolter, R.H., and Farrow, R.A., 1978, Chemical analyses of coal and shale from the Wasatch Formation in core hole B-1, City of Buffalo, Johnson County, Wyoming: U. S. Geological Survey Open-file Report 78-901, 28 p. [Wyoming - 29 samples]

1979

Affolter, R.H., and Hatch, J.R., 1979, Chemical analyses of coal and coal-associated rock samples from Rosebud and McKay beds, Tongue River Member of the Fort Union Formation, Colstrip coal deposit, Rosebud County, Montana: U. S. Geological Survey Open-file Report 79-1098, 44 p. [Montana - 61 samples]

Affolter R.H., and Hatch J.R., and Culbertson, W.C., 1979a, Chemical analyses of coal from the Tongue River Member, Fort Union Formation, Moorhead and southeastern part of the Northward Extention of the Sheridan coal fields, Powder River and Big Horn Counties, Montana: U. S. Geological Survey Open-file Report 79-538. 68p. [Montana - 83 samples]

Affolter, R.H., Hatch, J.R., Matson, R.E., and Sauer, L.A., 1979b, Chemical analyses of coal from the Tongue River Member, Fort Union Formation, Decker coal deposit, Big Horn county, Montana: U. S. Geological Survey Open-file Report 79-772, 39p. [Montana - 50 samples]

Affolter, R.H., Hatch, J.R., and McKay, E.J., 1979c, Chemical analyses of coal from the Knobloch and Flowers-Goodale beds, Tongue River Member of the Fort Union Formation, Otter Creek EMRIA study site, Powder River County, Montana: U. S. Geological Survey Open-file Report 79-859, 42p. [Montana - 50 samples]

Affolter, R.H., Hatch, J.R., and Ryer, T.A., 1979d, Chemical analyses of coal and shale from the Ferron Sandstone Member of the Mancos shale, Emery coal field, Emery County, Utah: U. S. Geological Survey Open-file Report 79-858, 35p. [Utah - 32 samples]

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- Hatch, J.R., and Barclay, C.V., 1979, Chemical analyses of deep-core coal and shale samples from the Almond Formation, Washakie Basin, Sweetwater County, Wyoming: U. S. Geological Survey Open-file Report 79-1249, 16 p. [Wyoming - 5 samples]
- Hatch, J.R., Affolter, R.H., and Davis, F.D., 1979a, Chemical analyses of coal from the Blackhawk Formation, Wasatch Plateau coal field, Carbon, Emery, and Sevier Counties, Utah: in Coal Studies, Utah Geological and Mineral Survey, Special Studies 49, pp. 69-102. [Utah - 52 samples]
- Hatch, J.R., Affolter, R.H., and Law, B.E., 1979b, Chemical analyses of coal from the Emery and Ferron Sandstone Members of the Mancos shale, Henry Mountains field, Wayne and Garfield Counties, Utah: U. S. Geological Survey Open-file Report 79-1097, 25 p. [Utah - 18 samples]
- Hatch, J.R., Madden, D.H., and Affolter, R.H., 1979c, Chemical analyses of coal and coal-associated rock samples from the Coalmont Formation, McCallum and Coalmont areas, North Park, Jackson County, Colorado: U. S. Geological Survey Open-file Report 79-1099, 42 p. [Colorado - 44 samples]
- Hildebrand, R.T., Hatch, J.R., and Henry, C.D., 1979, Chemical analyses of lignite from the Wilcox Group, Texas region, central and eastern Texas: U. S. Geological Survey Open-file Report 79-1250, 36 p. [Texas - 45 samples]
- Schneider, G.B., Hildebrand, R.T., and Affolter, R.H., 1979, Geology, coal resources, and chemical analyses of coal from the Fruitland Formation Kimbeto EMRIA study site, San Juan County, New Mexico: U. S. Geological Survey Open-file Report 79-1090. 38 p. [New Mexico - 17 samples]
- Zubovic, P., Oman, C.L., Coleman, S.L., Bragg, L.J., Kerr, P.T., Kozey, K.M., Simon, F.O., Rowe, J.J., Medlin, J.H., and Walker, F.E., 1979, Chemical analysis of 617 coal samples from the eastern United States: U. S. Geological Survey Open-file Report 79-665, 452 p. [Eight states - 617 samples]

1980

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- Affolter, R.H., Eager, G.P., and Hatch, J.R., 1980, Chemical analyses of coal from the Mesaverde Formation, Grand Mesa coal field, Delta and Mesa Counties, Colorado: U. S. Geological Survey Open-file Report 80-980, 38 p. [Colorado - 45 samples]
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- Hatch, J.R., Affolter, R.H., and Law, B.E., 1980, Chemical analyses of coal from Emery and Ferron Sandstone Members of Mancos Shale, Henry Mountains field, Wayne and Garfield Counties, Utah: in Proceedings of the 1980 Henry Mountains Symposium, Utah Geological Association, pp. 337-342. [Utah - 18 samples]
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- Hobbs, R.G., 1980, Analyses of coal and selected rock samples from the USGS 1975 Drilling Recluse Geologic Analysis Area Northern Campbell County, Wyoming: U. S. Geological Survey Open-file Report 80-1161, 78 p. [Wyoming - 133 samples]
- Wedge, W.K., and Hatch, J.R., 1980, Chemical Composition of Missouri Coals: Missouri Department of Natural Resources, Geological Survey Report of Investigations 63, 102 p. [Missouri - 113 samples]
- Zubovic, P., Oman, C.L., Bragg, L.J., Coleman, S.L., Rega, N. H. Lemaster, M. E., Rose, H.J., Golightly, D.W., and Puskas, J., 1980, Chemical analysis of 659 coal samples from the eastern United States: U. S. Geological Survey Open-file Report 80-2003, 513 p. [Eight states - 659 samples]

1981

- Affolter, R.H., Eager, G.P., and Hatch, J.R., 1981, Chemical analyses of coal from the Mesa Verde Formation, Grand Mesa coal field, Delta and Mesa Counties Colorado, in Khalsa, N.S. and Ladwig, L.R., editors, Colorado Coal Analyses 1976-1979, Colorado Geological Survey Information Series 10, Section G, p. 333-364. [Colorado - 45 samples]

- Affolter, R.H., Simon, F.O., and Stricker, G.D., 1981, Chemical analyses of coal from the Healy, Kenai, Seldovia and Utukok River 1:250,000 quadrangles Alaska: U.S. Geological Survey Open-File Report 81-654, 88 pages. [Alaska - 118 samples]
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- Botoman, G. and Stith, D. A., 1981, Analyses of Ohio coals, 1977-1978: Ohio Division of Geological Survey Information Circular No. 50, 54 p. [Ohio - 315 samples]
- Hatch, J.R., Madden, D.H., and Affolter, R.H., 1981, Chemical analyses of coal and coal-associated rock samples from the Coalmont Formation, McCallum and Coalmont area, North Park, Jackson County, Colorado in Khalsa, N.S. and Ladwig, L.R. eds., Colorado Coal Analyses 1976-1979, Colorado Geological Survey Information Series 10, Section C, p. 105-140. [Colorado - 22 samples]
- Henderson, J.A., Jr., Oman, C.L., and Coleman, S.L., 1981, Analysis of coal samples collected 1975-1977: Virginia Division of Mineral Resources Publication 33, 135 p. [Colorado - 134 samples]
- Hildebrand, R.T., 1981, Chemical analyses of coal from the Krebs Group (Pennsylvanian), Arkoma basin, eastern Oklahoma: U. S. Geological Survey Open-file Report 81-894, 42 pages. [Oklahoma - 51 samples]
- Hildebrand, R.T., and Garrigues, R.S., 1981, Geology and Chemical analyses of coal, Mesaverde Group (Cretaceous), Lower White River coal field, Moffat and Rio Blanco Counties, Colorado: U. S. Geological Survey Open-file Report 81-597, 26 pages. [Colorado - 13 samples]
- Hildebrand, R.T., Garrigues, R.S., Meyer, R.F., and Reheis, M.C., 1981a, Geology and chemical analyses of coal and coal-associated rock samples, Williams Fork Formation (Upper Cretaceous), northwestern Colorado: U. S. Geological Survey Open-file Report 81-1348, 94 pages. [Colorado - 117 samples]
- Hildebrand, R.T., Clardy, B.F., and Holbrook, D.F., 1981b, Chemical analyses of lignite from the Wilcox and Clairborne Groups (Eocene), southern and eastern Arkansas: Arkansas Geological Commission Information Circular 28, 57 p. [Arkansas - 53 samples]

- Kahlsa, N. S., 1981, Chemical analyses of coal samples from the San Juan River Region: in Khalsa, N. S. and Ladwig, L.R., 1981, Colorado Coal Analysis 1976-1979: Colorado Geological Survey, Information Series 10, Section E, p. 213-240. [Colorado - 12 samples]
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- Khalsa, N. S. and Schultz, J. E., 1981a, Chemical analyses of coal samples from the Green River Region: in Khalsa, N. S. and Ladwig, L.R., 1981, Colorado Coal Analysis 1976-1979: Colorado Geological Survey, Information Series 10, Section B, p. 65-104. [Colorado - 21 samples]
- Kahlsa, N. S. and Schultz, J. E., 1981b, Chemical analyses of coal samples from the Uinta Region: in Khalsa, N. S. and Ladwig, L.R., 1981, Colorado Coal Analysis 1976-1979: Colorado Geological Survey, Information Series 10, Section F, p. 241-332. [Colorado - 36 samples]
- Khalsa, N. S. and Staker, R. O., 1981, Chemical analyses of coal samples from the Raton Mesa and Canon City Field: in Khalsa, N. S. and Ladwig, L.R., 1981, Colorado Coal Analysis 1976-1979: Colorado Geological Survey, Information Series 10, Section D, p. 141-212. [Colorado - 33 samples]
- Oman, C.L., Bragg, L.J., Nock, H.M., Schwarz, L.J., Harris, J.L., Jr., Rega, N.H., and Crowley, S.S., 1981, Chemical analysis of 45 Maryland coal samples: U. S. Geological Survey Open-file Report 81-1099, 56 p. [Maryland - 45 samples]
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1982

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1983

Sanchez, J. D., 1983, Chemical analysis of coal from the Blackhawk Formation, Wasatch Plateau coal field, Sevier County, Utah: U. S. Geological Survey Open-file Report 83-363, 13 p. [Utah - 3 samples]

1984

Glass, G. B., 1984, Analyses and measured sections of 25 coal samples from the Hanna Coal field of southcentral Wyoming (collected between 1975 and 1979): Geological Survey of Wyoming Report of Investigations No. 27, 104 p. [Wyoming - 25 samples]

Hatch, J. R., Avcin, M. J., and Van Dorpe, P. E., 1984, Element geochemistry of Cherokee Group coals (Middle Pennsylvanian) from south-central and southeastern Iowa: Iowa Geological Survey Technical Paper No. 5, 108 p. [Iowa - 106 samples]

1985

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1986

Affolter, R. H. and Stricker, G. D., 1986, Variations in element distribution of coal from the Usibelli Mine, Healy, Alaska: in Focus on Alaska's Coal, 1986, P. D. Rao, ed., Mineral Industry Research Laboratory Report no. 72 p. 91-99. [Alaska - 8 samples]

Botoman G. and Stith, D. A., 1986, Analyses of Ohio coals, 1979-1980: Ohio Division of Geological Survey Information Circular No. 52, 26 p. [Ohio - 169 samples]

Currens, J.C., Bragg, L.J., and Hower, J.C., 1986, Analyses of coal samples from the Princess District, Kentucky (Boyd, Carter, Greenup, and Lawrence Counties and part of Lewis County): Kentucky Geological Survey Inf. Circ. 18, Ser. XI, 128 p. [Kentucky - 42 samples]

- Hildebrand, R.T., 1986, Chemical analyses of coal from the Anderson coal deposit, Johnson County, Wyoming: U. S. Geological Survey Open-file Report 86-575, 14 p. [Wyoming - 30 samples]
- Tewalt, S. J., 1986, Chemical characterization of Texas lignite: Texas Bureau of Economic Geology Geological Circular 86-1, 54 p. [Texas - 128 samples]
- Warlow, R.C., Bragg, L.J., Windolph, J.F., Jr., Hickling, N.L., Oman, J.K., Kerr, P.T., Baker, J.W., 1986, Chemical analyses and evaluation of 40 samples from the Upper Cretaceous coal beds from the Wind River Basin, Wyoming: U. S. Geological Survey Open-file Report 86-187, 51 p. [Wyoming - 40 samples]

1987

- Coleman, S.L., Crawford, T.J., and Medlin, J.H., 1987, Analyses of coal from Northwest Georgia, Georgia Geological Survey, Information Circular 76, 321 p. [Georgia - 47 samples; Alabama - 8 samples]
- Currens, J.C., Bragg, L.J., and Hower, J.C., 1987a, Analyses of coal samples from the Hazard District, Kentucky (Breathitt, Knott, Leslie, and Perry Counties, and parts of Letcher and Harlan Counties): Kentucky Geological Survey Inf. Circ. 19, Ser. XI, 381 p. [Kentucky - 132 samples]
- Currens, J.C., Bragg, L.J., and Hower, J.C., 1987b, Analyses of coal samples from the Big Sandy District, Kentucky (Floyd, Johnson, Martin, and Pike Counties): Kentucky Geological Survey Inf. Circ. 20, Ser. XI, 421 p. [Kentucky - 146 samples]
- Currens, J.C., Bragg, L.J., and Hower, J.C., 1987c, Analyses of coal samples from the Southwestern District, Kentucky (Clay, Jackson, Knox, Laurel, Lee, McCreary, Owsley, Whitley, and parts of Bell, Clinton, Estill, Madison, Pulaski, Rockcastle, and Wayne Counties): Kentucky Geological Survey Inf. Circ. 21, Ser. XI, 338 p. [Kentucky - 119 samples]
- Currens, J.C., Bragg, L.J., and Hower, J.C., 1987d, Analyses of coal samples from the Upper Cumberland District, Kentucky (parts of Bell, Harlan, Letcher, and Whitley Counties): Kentucky Geological Survey Inf. Circ. 22, Ser. XI, 178 p. [Kentucky - 57 samples]
- Currens, J.C., Bragg, L.J., and Hower, J.C., 1987e, Analyses of coal samples from the Licking River District, Kentucky (Elliott, Magoffin, Morgan, and Wolfe Counties, and parts of Menifee, Powell and Rowan Counties): Kentucky Geological Survey Inf. Circ. 23, Ser. XI, 127 p. [Kentucky - 41 samples]

Haley, B. R., 1987, Resources of low-volatile bituminous coal and semianthracite in west-central Arkansas, 1978: U. S. Geological Survey Bull. 1632. 54 p. [Arkansas - 24 samples]

1988

Botoman, G. and Stith, D. A., 1988, Analyses of Ohio coals, 1982-1984: Ohio Division of Geological Survey Information Circular No. 55, 17 p. [Ohio - 109 samples]

Carey, M. A., Roberts, S. B., and Clark, A. C., 1988, Chemical analyses for nine coal samples from the Sagwon Member (Tertiary) of the Sagavanirktok Formation, North Slope, Alaska: U. S. Geological Survey Open-file Report 88-678, 17 p. [Alaska - 9 samples] {prox/ult/S-form data in OFR 88-21}

1989

Tewalt, S.J., Hildebrand, R.T., Finkelman, R.B., 1989, Analyses of lignites from the Fort Union Region, North Dakota and Montana, U. S. Geological Survey Open-file Report 89-285, 162 p. [Montana - 270 samples; North Dakota - 134 samples]

1990

Biewick, L.R., Hardie, J.K., Williamson, C., and Arndt, H.H., 1990, Evaluation of coal resources in the eastern part of the Fort Peck Indian Reservation, Montana, U. S. Geological Survey Bull. 1896, 136p. [Montana - 37 samples]

Tewalt, S.J., Finkelman, R.B., 1990, Analytical data from bituminous coals and associated rocks from Arkansas, Iowa, Kansas, Missouri, Nebraska, and Oklahoma, U. S. Geological Survey Open-file Report 90-669. [Five states - 71 samples]

Distribution of Publications by State

Alabama - 1,032 samples analyzed

Swanson and others, 1976 (Eastern Province)	10
Swanson and others, 1976 (Gulf Province)	19
Zubovic and others, 1979 (Eastern Province)	20
Coleman and others, 1987 (Eastern Province)	8
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	57

Alaska - 672 samples analyzed

Swanson and others, 1976	18
Affolter and others, 1981	118
Affolter and Stricker, 1986	8
Carey and others, 1988	9
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	153

Arizona - 40 samples analyzed

Swanson and others, 1976	16
Arizona Bureau of Mines, 1977	7
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	23

Arkansas - 107 samples analyzed

Swanson and others, 1976 (Interior Province)	16
Swanson and others, 1976 (Gulf Province)	8
Hildebrand and others, 1981b (Gulf Province)	53
Haley, 1987 (Interior Province)	24
Tewalt and Finkelman, 1990 (Interior Province)	6
	<hr/>
	107

California - 1 sample analyzed

Colorado - 922 samples analyzed

Swanson and others, 1976	30
Boreck and others, 1977	64
Hatch and others, 1979c	44
Affolter and others, 1980	45
Affolter and others, 1981 (same as preceedind ref.)	45
Hatch and others, 1981	22
Hildebrand and Garrigues, 1981	13
Hildebrand and others, 1981a	117
Khalsa, 1981	12
Khalsa and Campbell, 1981	7
Khalsa and Schultz, 1981a	21
Khalsa and Schultz, 1981b	36
Khalsa and Stoker, 1981	33
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	444

Georgia - 39 samples analyzed

Coleman and others, 1987	39
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Idaho - 58 samples analyzed

Illinois - 133 samples analyzed

Indiana - 378 samples analyzed

Swanson and others, 1976	22
Zubovic and others, 1979	108
Zubovic and others, 1980	49
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	179

Iowa - 145 samples analyzed

Swanson and others, 1976	32
Hatch and others, 1984 (includes data in preceding ref)	106
Tewalt and Finkelman, 1990	39
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	145

Kansas - 45 samples analyzed

Swanson and others, 1976	14
Tewalt and Finkelman, 1990	3
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	17

Kentucky - 1,226 samples analyzed

Swanson and others, 1976 (Eastern Province)	34
Zubovic and others, 1979 (" ")	27
Currens and others, 1986 (" ")	42
Currens and others, 1987a (" ")	132
Currens and others, 1987b (" ")	146
Currens and others, 1987c (" ")	119
Currens and others, 1987d (" ")	57
Currens and others, 1987e (" ")	41
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	598

Louisiana - 1 sample analyzed

Maryland - 75 samples analyzed

Swanson and others, 1976	8
Zubovic and others, 1980	25
Oman and others, 1981 (includes data in preceding refs)	20
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	53

Massachusetts - 12 samples analyzed

Zubovic and others, 1980	5
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Michigan - 3 samples analyzed

Swanson and others, 1976 3

Mississippi - 31 samples analyzed

Swanson and others, 1976 7

Missouri - 138 samples analyzed

Wedge and others, 1976 30
Swanson and others, 1976 (same data as preceeding ref.) 30
Wedge and Hatch, 1980 (30 in previous references) 113
Tewalt and Finkelman, 1990 11

124

Montana - 886 samples analyzed

U. S. BLM, 1975a 67
McKay and others, 1976 (same as preceeding ref.) 67
Swanson and others, 1976 40
Culbertson and others, 1978 13
Affolter and Hatch, 1979 61
Affolter and others, 1979a 83
Affolter and others, 1979b 50
Affolter and others, 1979c 50
Hatch and Affolter, 1979 18
Affolter and Hatch, 1980b 44
Robinson and others, 1981 39
Biewick and others, 1990 37
Tewalt and others, 1990 134

636

Nebraska - 17 samples analyzed

Swanson and others, 1976 5
Tewalt and Finkelman, 1990 12

17

Nevada - 14 samples analyzed

New Mexico - 343 samples analyzed

Pillmore and Hatch, 1976	26
Swanson and others, 1976	18
Schneider and others, 1979	17
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	61

North Carolina - 55 samples analyzed

North Dakota - 273 samples analyzed

USGS and Mont. BuM., 1976	4
Swanson and others, 1976	18
Hatch and Affolter, 1978	40
Affolter and Hatch, 1980b	13
Affolter and Kirschbaum, 1982	10
Hildebrand and Hatch, 1977	24
Tewalt and others, 1990 (includes data in previous refs)	270
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	270

Ohio - 803 samples analyzed

Struble and others, 1976	5
Swanson and others, 1976	70
Botoman and Stith, 1978	151
Zubovic and others, 1979	40
Couchot and others, 1980	94
Zubovic and others, 1980	101
Botoman and Stith, 1981	315
Botoman and Stith, 1986	169
Botoman and Stith, 1988	109

(includes some duplication)

1,054

Oklahoma - 85 samples analyzed

Swanson and others, 1976	21
Hildebrand, 1981	51
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	72

Oregon - 0 samples analyzed

Pennsylvania - 1,528 samples analyzed

Swanson and others, 1976 (anthracites)	53
Swanson and others, 1976	97
Zubovic and others, 1979	71
Zubovic and others, 1980	132
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	353

Rhode Island - 11 samples analyzed

Zubovic and others, 1980	10
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South Dakota - 0 samples analyzed

Tennessee - 62 samples analyzed

Swanson and others, 1976	18
Zubovic and others, 1979	27
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	45

Texas - 128 samples analyzed

Hildebrand and others, 1979	45
Tewalt, 1986 (includes previous ref)	128

Utah - 486 samples analyzed

U. S. BLM, 1975b	8
Swanson and others, 1976	26
Affolter and others, 1979d	32
Hatch and others, 1979a	52
Hatch and others, 1979b	18
Affolter and Hatch, 1980a	26
Hatch and others, 1980	18
Sanchez, 1983	3
	<hr/>
	183

Virginia - 579 samples analyzed

Swanson and others, 1976	45
Zubovic and others, 1979	72
Zubovic and others, 1980	83
Henderson and others, 1981	134
Henderson and others, 1985	83
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	347

Washington - 80 samples analyzed

Swanson and others, 1976	3
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West Virginia - 887 samples analyzed

Swanson and others, 1976	49
Zubovic and others, 1979	252
Zubovic and others, 1980	254
Warlow and others, 1981	22
Trent and others, 1982	12
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	589

Wyoming - 1,627 samples analyzed

USGS and Mont. Bu.M, 1974	111
Glass, 1975	54
U. S. BLM, 1975b	15
USGS and Mont. Bu.M, 1976	15
Swanson and others, 1976 (North. Great Plains Province)	35
Swanson and others, 1976 (Rocky Mountain Province)	34
Glass, 1978	18
Hatch and others, 1978	29
Hatch and Affolter, 1980	31
Hobbs, 1980	133
Glass, 1984	25
Hildebrand, 1986	30
Warlow and others, 1986	40
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	570