

Industrial Minerals of the Midcontinent— Proceedings of the Midcontinent Industrial Minerals Workshop

Edited and compiled by Alfred L. Bush and Timothy S. Hayes

U.S. GEOLOGICAL SURVEY BULLETIN 2111

Prepared in cooperation with the U.S. Bureau of Mines, the Arkansas Geological Commission, the Illinois State Geological Survey, the Kansas Geological Survey, the Kentucky Geological Survey, the Missouri Division of Geology and Land Survey, the Nebraska Division of Conservation and Survey, and the Oklahoma Geological Survey



Presentations and discussions at a Workshop, September 16 and 17, 1991, in St. Louis, Missouri, held to probe the issues and options that impact the current situation in the field of industrial minerals, the availability, needs, problems, and plans for resources in the central midcontinent region of the United States

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1995

UB/TIB Hannover 89
113 283 970



CONTENTS

Abstract.....	1
Introduction	2
Acknowledgments	3
Welcome: Timothy S. Hayes, Coordinator	3
Kickoff—The highway infrastructure and industrial minerals	
Dr. Anthony R. Kane	4
Discussion.....	8
Issue areas.....	9
Industrial minerals resource identification and evaluation	
Dr. Morris W. Leighton.....	9
Land-use planning to ensure industrial minerals availability	
Edward T. Sieben	21
Economic limitations on industrial minerals availability	
Aldo Barsotti, Valentin V. Tepordei, Dr. Subhash B. Bhagwat.....	25
Environmental issues that affect production and consumption of industrial minerals	
Timothy L. Haithcoat	33
Overview of the status of the industrial minerals industry	
C. Dudley Blancke.....	37
Panel sessions—Day 1.....	39
Resource identification and evaluation.....	39
Panel presentations	40
H. Lyn Bourne	40
J. James Eidel	41
Ira R. Satterfield	42
William M. Sheftick	42
Zareh Mozian.....	43
Discussion.....	44
Land-use planning and the industrial minerals.....	46
Panel presentations	46
Robert S. Joice.....	46
Robert L. Pinkerton	49
Kent M. Bratton.....	52
Mark L. Falloon.....	53
D. Anne Lewis.....	53
J. Kurt von Achen.....	54
Discussion.....	55
Cost factors in industrial minerals use.....	60
Panel presentations	61
Dr. Subhash B. Bhagwat	61
George E. Dirkes	61
John F. Schmidt.....	64
Louis Griesemer	65
Discussion.....	65
Keynote address.....	67
Dr. Charles G. Groat: “If only Dick and Jane had gone to the mines”.....	67
Panel sessions—Day 2.....	71
Mineral production in an environmentally responsible manner.....	71
Panel presentations	71
John D. Kiefer.....	71

Carl Blomgren.....	72
Virgil W. Smith, Jr.....	73
Kenneth V. Luza	74
Micheal J. Thompson.....	75
Discussion.....	76
Environmental costs of ignoring resource data.....	82
Panel presentations.....	83
Dr. Charles J. Mankin	83
John A. Young	84
Joseph P. McGuire	86
Dewayne L. Knott.....	87
Thomas G. McSwiggin	88
Discussion.....	90
Panel summations	90
Resource evaluation—H. Lyn Bourne	90
Land-use planning—Robert S. Joice [by Timothy S. Hayes].....	91
Cost factors—Dr. Subhash B. Bhagwat.....	92
Environmentally responsible production—John D. Kiefer	92
Environmental costs of ignoring resource data—Dr. Charles J. Mankin	93
Discussion of issues and options.....	93
The need for mapping	93
The need for data base systems.....	96
The need for public awareness of the importance of industrial minerals	96
The need for mutual sharing of information	97
The need to adapt to urban sprawl and the question of post-mining reclamation	98
The need to address impact on transportation and the environment.....	99
The need to be environmentally responsible	100
The problem of regulation	101
Environmental costs of ignoring information	101
The need for research and development	101
The industry's economic problems	104
Closing statement.....	107
Summary of issues, options, and recommendations	107
Appendices—Pertinent legislation, permitting procedures, and industrial minerals reference list	111
Arkansas.....	111
Illinois	112
Iowa.....	113
Kansas	115
Kentucky	116
Missouri	119
Nebraska	121
Oklahoma.....	124
Tennessee.....	125

FIGURES

1.	Photograph of shoreline defense (groins), Lake Michigan.....	10
2.	Photograph of riprap for shoreline defense (headwaters), Lake Michigan	10
3.	Diagram showing average annual U.S. per capita industrial minerals consumption	11
4-7.	Photographs showing:	
4.	Thornton quarry, Chicago area, Illinois.....	12
5.	Thornton quarry and neighborhood, Chicago area, Illinois	13
6.	Bridgeport quarry, urban sprawl victim and present-day waste disposal site	14
7.	Chicago area quarry, growth constrained by urban development.....	14
8.	Skylab photograph of urban sprawl, Chicago area, Illinois	15
9.	Photograph of underground mine for aggregate, Chicago area, Illinois	15
10.	Geologic sketch map, showing third dimension.....	16
11.	Map of Illinois, showing status of mapping for sand and gravel.....	17
12.	Map of Illinois, showing status of mapping for limestone, dolomite, and sandstone	17
13.	Map of Illinois, showing location of limestone and dolomite quarries and mines.....	18
14.	Photograph of underground mine in carbonate rocks, St. Louis, Mo., area.....	18
15.	Diagram showing cost of crushed stone transportation by truck.....	19
16.	Map showing generalized land-use plan, Kane County, Ill., 1976.....	22
17.	Map showing comprehensive land-use plan, 1982-2000, Kane County, Ill	23
18.	Photograph of bicycle trail at Geneva Dam, Kane County, Ill	24
19-22.	Maps showing:	
19.	Earth materials of Kane County, Ill.....	26
20.	Bedrock topography, Kane County, Ill.....	28
21.	Distribution and thickness, Tiskilwa Till, Kane County, Ill	30
22.	Stack units, Kane County, Ill.....	32
23-25.	Diagrams showing:	
23.	Cost of materials as a part of infrastructure costs	34
24.	Materials and transportation data, City of Urbana project.....	35
25.	Materials and transportation data, Route 51 upgrade project.....	35
26.	Photograph of downtown Lexington, Ky	46
27.	Map showing urban service area, Fayette County, Ky	47
28.	Diagrammatic sketch showing the three physical concerns with the environment in mining.....	47
29-34.	Photographs showing:	
29.	Open pit mine, Fayette County, Ky	48
30.	Clays Ferry pit and underground mine, Fayette County, Ky.....	49
31.	Unspoiled Kentucky River countryside, Fayette County, Ky.....	49
32.	Recreation trail through undisturbed area, Fayette County, Ky	50
33.	Elk Lick Creek, along quarry property boundary	51
34.	Elk Lick Creek, showing deposition of quarry product rock, Fayette County, Ky.....	52

TABLES

1.	Production of aggregates in the Central States region.....	27
2.	Estimated U.S. Highway construction expenditures	29
3-7.	Cost distribution, Federal Aid Highway construction contracts	
3.	All highways	31
4.	Illinois.....	33
5.	Kentucky.....	35
6.	Missouri.....	36
7.	Tennessee.....	36
8.	Factors affecting the cost of industrial minerals.....	62