

# OVERVIEW OF MINE SUBSIDENCE INSURANCE PROGRAMS IN THE UNITED STATES<sup>1</sup>

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**Abstract:** Because the U.S. insurance industry has determined that mine subsidence is uninsurable, it has decided not to voluntarily offer mine subsidence insurance. The U.S. Bureau of Mines has long been investigating the effects of mine subsidence. These investigations have resulted in Federal regulations and controls of mine subsidence. This Bureau report addresses the development of mine subsidence insurance programs and the eight current mine subsidence insurance programs in the United States. The States that have these subsidence programs include Colorado, Illinois, Indiana, Kentucky, Ohio, Pennsylvania, West Virginia, and Wyoming. The report discusses major aspects of these programs, including history, administrative and operational procedures, insurable structures, recognition of mine subsidence, insurance premiums, and the economic health of each program. Information within this report can be useful for residential and commercial property owners and mine operators. States that are considering starting a mine subsidence insurance program or that have one in place can also use this report as a model for initiating or modifying their programs.

## Introduction

The U.S. Geological Survey has identified 1.7 trillion tons of coal resources in the United States (National Coal Association 1981). As many as 30 States have coal mining operations extracting coal from these reserves (Journal of American Insurance 1985). A 1975 Bureau study (Johnson and Miller 1979) estimated that 7 million acres of land has been undermined in the United States. There still remain about 5.2 million acres of undermined surface area that has not yet subsided. Approximately 500,000 acres is situated under urban, populated areas. The National Research Council Committee on Ground Failure Hazards estimated that from 1925 to 1975 landslides and subsidence caused at least \$75 billion in losses. Costs of subsidence damage are three times higher than the combined estimated costs of damage caused by floods, hurricanes, tornadoes, and earthquakes (Insurance Review 1986).

The insurance industry in the United States has investigated the feasibility of offering insurance for damage resulting from subsidence. The Mine Subsidence Task Force of the National Committee on Property Insurance conducted a study in 1986. Their conclusion was "before the insurance industry is called upon to underwrite the devastation that results from mine and other land subsidence, more research is needed in the hazard's prediction, cost, and insurability" (National Underwriter 1986).

The earlier investigations by the Bureau has helped instigate the enactment of a Federal law to protect society and the environment from the adverse effects of coal mine operations (Johnson and Miller 1979). These investigations influenced legislation to create grant monies for States to initiate their own mine subsidence programs.

## Development of State Subsidence Insurance Programs

Until 1977, it was the State's responsibility to regulate and control subsidence-related problems on non-Federal lands. On August 3, 1977, Public Law 95-87, the Surface Mining Control and Reclamation Act

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(SMCRA), was enacted. Provisions within this act help regulate the effects of underground coal mining operations on the surface.

Under SMCRA, coal companies are required to design and implement methods to prevent subsidence or to control and minimize its effects. In addition, underground coal companies are required to pay a 15 cent fee for every ton of coal produced. This fee, along with surface mining operation fees (35 cents per ton), is deposited into the Abandoned Mined Land Reclamation Fund. Money from the Fund helps cover the reclamation costs of underground and surface strip mines abandoned before 1977.

Stabilizing or reclaiming the surface or ground that is subsiding, because of a mine abandoned before 1977, is considered a reclamation cost. Stabilizing or repairing surface structures that are damaged by subsidence is not considered a reclamation cost. Reclamation costs for uncontrolled subsidence caused by mines abandoned after 1977 are the responsibility of the operating coal company. However, liability for costs of subsidence damage to surface structures caused by mining after 1977 depends upon individual State regulations.

In 1984, Congress enacted changes to SMCRA. One of the changes was to authorize grants up to \$3 million from the Abandoned Mined Land Reclamation Fund for the establishment of State-operated mine subsidence insurance programs (National Underwriter 1986). To be eligible for the grant, States must contribute to the fund and have SMCRA-approved abandoned mined land reclamation programs (Netzner 1986). States that receive the grant have up to 8 years for their programs to become self-sustaining (Godesky 1990).

There are 21 States eligible for Federal subsidence assistance. Currently, eight States have mine subsidence insurance programs: Colorado, Illinois, Indiana, Kentucky, Ohio, Pennsylvania, West Virginia, and Wyoming. Four of the eight States utilized the Federal grant money to initiate their programs. Three of the States initiated their programs with State appropriations, while one used both State and Federal money. To date, New Mexico is the only other State that is considering organizing a mine subsidence insurance program.

### State Mine Subsidence Programs

#### Colorado

Coal mining in Colorado began in the 1860's. The Plan of Operation of the Colorado Mine Subsidence Protection Program reports that there are nearly 50,000 acres of undermined land. This 50,000 acres, in the Front Range corridor, affects more than 7,450 structures and approximately 25,000 people. The Colorado Mine Subsidence Protection Program was established in 1986. Funds to initiate the Trust Fund that finances the program were obtained from the Federal Government.

The Johnson & Higgins insurance brokerage has been designated as the plan administrator of the Mine Subsidence Protection Program. Subsidence insurance policies are only issued to owners of residential structures. The Mine Subsidence Protection Program only insures damage caused by underground coal mine subsidence. Participation in the program is voluntary. The cost to participate in Colorado's program is \$160 for the first year and \$35 per year thereafter. The first year's fee covers a \$125 inspection fee on the insured property. The maximum coverage is \$50,000 per occurrence after a \$1,000 deductible.

As of late 1992, there were 1,100 policyholders (Gwinn 1992). There have been six subsidence claims filed. Five of the claims have been invalid claims, while the one remaining claim is pending. As of December 1992, the total balance of the program's Trust Fund was approximately \$3 million.

## Illinois

Underground mining began in Illinois in 1842. Today, there are about 750,000 acres of surface land undermined in the State (DuMontelle et al. 1981). The Illinois Mine Subsidence Insurance Fund recognizes 34 counties as mine-subsidence-prone areas with approximately 1% or more of the land surface undermined.

In September 1979, Illinois mandated all private insurance companies to offer mine subsidence insurance. The Illinois Mine Subsidence Insurance Fund is the reinsurer for the insurance companies. The Illinois Mine Subsidence Insurance Fund was initiated with a State loan. The Illinois Mine Subsidence Insurance Fund is the only taxpaying, industry-operated subsidence program (Murphy 1992). The fund is guided by a Governing Committee. The Governing Committee is composed of five members from the insurance industry and four members who are not associated with either the insurance industry or the fund.

Mine subsidence insurance coverage can be obtained for residential or commercial structures. The fund recognizes mine subsidence as the collapse of all manmade underground mines. Participation in the program is voluntary. Mine subsidence coverage must be purchased in amounts no less than the amount insured by conventional property insurance, up to a maximum of \$350,000 per structure. Premium rates for both residential and commercial insurance range from \$8 for \$10,000 or less worth of coverage to \$53 for \$350,000 worth of coverage. The deductible for any paid claim is 2% of the insurance coverage up to a maximum of \$500.

As of late 1992, there were over 350,000 structures insured. About 5,000 claims have been filed. Approximately 750 of those claims, or 15%, have been valid subsidence claims (Murphy 1992). The remaining 4,250 claims are either pending or are not subsidence related. As of late 1992, the fund's surplus totaled approximately \$1.1 million (Murphy 1992).

## Indiana

Underground coal mining has been occurring in Indiana since 1850. There are approximately 150 square miles, or 100,000 acres, of surface land undermined in the State. The Mine Subsidence Program of Indiana offers subsidence insurance in 26 counties (Indiana Department of Insurance 1988).

Indiana's 1986 Indiana Insurance Code requires insurance companies licensed in Indiana to offer mine subsidence insurance. Indiana's Mine Subsidence Insurance Fund is the reinsurer for the insurance companies. The fund was initiated by a Federal grant (Foy 1992). The Indiana Mine Subsidence Insurance Fund is administered by the Commissioner of Insurance, Indiana's Department of Insurance.

Mine subsidence insurance can be obtained for residential or commercial structures. The fund defines mine subsidence as the collapse of only underground abandoned coal mines. Participation in the subsidence program is voluntary. Subsidence coverage must be purchased in amounts no less than the amount insured by conventional property insurance. The maximum coverage is \$75,000 per structure. Annual insurance premiums for residential structures range from \$15 for \$15,000 or less worth of coverage to \$27 for \$75,000 worth of coverage. Annual insurance premiums for commercial structures range from \$24 for \$15,000 or less worth of coverage to \$48 for \$75,000 worth of coverage. The deductible for a paid subsidence claim is 2% of the insurance coverage; the deductible cannot be less than \$250 or more than \$500.

Currently, Indiana has about 60,000 policyholders. There have been about 67 claims filed. Thirteen, or 19%, of the claims have been valid, 40 claims have been invalid, and the remaining 14 are pending. The total fund's surplus as of late 1992 was approximately \$2 million.

## Kentucky

Coal mining was occurring in Kentucky as early as 1790. Kentucky has two coalfields, one in the eastern part of the State and one in the western part. In western Kentucky, coal reserves underlie about 6,400 square miles in 19 counties. In eastern Kentucky, coal reserves underlie about 11,000 square miles in 33 counties. Past studies have indicated there are approximately 37,000 acres of surface land overlying abandoned coal mines (Rosenbaun 1990).

In 1984, Kentucky established the Kentucky Mine Subsidence Insurance Fund and required insurance companies licensed with the State of Kentucky to offer mine subsidence insurance. The Kentucky Mine Subsidence Insurance Fund (the reinsurer for the insurance companies) became operable November 1, 1986. The Kentucky fund was initiated with a Federal grant.

The Kentucky Mine Subsidence Insurance Fund is administered by the Division of State Risk and Insurance Services of Kentucky's Department of Insurance. Mine subsidence insurance can be obtained for residential or commercial structures. Mine subsidence is recognized by the fund as the collapse of underground coal mines. Mine subsidence insurance can be obtained in 34 counties in Kentucky. Participation in the program is voluntary.

Subsidence coverage must be purchased in amounts no less than the amount insured by conventional property insurance, provided the maximum coverage does not exceed \$50,000. Insurance premiums for residential structures range from \$15 for \$15,000 or less worth of coverage to \$22 for \$50,000 worth of coverage. Insurance premiums for commercial structures range from \$24 for \$15,000 or less worth of coverage to \$38 for \$50,000 worth of coverage. The deductible for a paid claim is 2% of insurance coverage; this amount cannot be less than \$250 or more than \$500.

Currently, Kentucky has about 37,000 policyholders. There have been approximately 305 subsidence claims filed. Of the 305 claims filed, 29, or 10%, are related to mine subsidence, 260 were invalid, and 16 are still pending. The total fund surplus as of December 1992 was approximately \$5.2 million.

## Ohio

Coal mining has been occurring in Ohio since the late 1700's. The U.S. Department of Energy estimated that about 10,000 square miles, or 24%, of the State overlies coal deposits (Energy Information Administration 1989). Currently, there are approximately 3,800 abandoned underground coal and mineral mines (Sommers et al. 1988).

In January 1985, Ohio established the Ohio Mine Subsidence Insurance Underwriting Association, the Mine Subsidence Insurance Governing Board, and the Mine Subsidence Insurance Fund. Insurance coverage became available to the public in 1987. Ohio requires insurance companies licensed in Ohio to offer mine subsidence coverage. The Mine Subsidence Insurance Governing Board administers the Mine Subsidence Insurance Fund. Ohio's subsidence program was initiated with State and Federal appropriations.

Subsidence insurance can be obtained for residential structures only. Mine subsidence is recognized as the collapse of all underground mines. Mine subsidence insurance is mandatory in 27 counties and voluntary in 10 other counties (Leslie 1992). Subsidence coverage must be purchased in amounts no less than the amount insured by the conventional property insurance up to a maximum of \$50,000. The annual premium rate for the insurance is \$3 for the mandatory insurance and \$12 for the voluntary insurance, regardless of the amount of the coverage. For any subsidence claim, there is a 2% deductible, with a minimum of \$250 and a maximum of \$500.

There were about 13,000 policyholders as of late 1992. There have been 136 claims filed. To date, 16, or 12%, of the claims were valid, 115 were invalid, and the remaining 5 are still pending. Currently, there is no surplus of funds available for Ohio's subsidence program. This is due to a 1992 restructuring of the subsidence program. Projections indicate that the subsidence fund will have a surplus in 1993 and thereafter (Leslie 1992).

### Pennsylvania

Coal mining in Pennsylvania was first recorded in 1759. Approximately 15,000 square miles, or 33%, of Pennsylvania overlies coal deposits (Energy Information Administration 1989). As of 1985, it was estimated that more than 5 million Pennsylvanians live over abandoned mine sites (Journal of American Insurance 1985).

On August 23, 1961, Pennsylvania established the Coal and Clay Mine Subsidence Insurance Board and the Coal and Clay Mine Subsidence Insurance Fund. The fund for the program was initiated by State appropriations. Subsidence insurance is issued by Pennsylvania's Mine Subsidence Insurance Fund under the Bureau of Mines and Reclamation, Department of Environmental Resources. The Coal and Clay Mine Subsidence Insurance Board implements the rules and regulations of the insurance program.

Subsidence insurance can be obtained in 28 counties throughout the coal or clay mining regions. Insurance is voluntary and can be obtained for both residential and commercial structures. The subsidence insurance covers subsidence due to coal or clay mining operations. The maximum coverage available in Pennsylvania is \$100,000. Costs for 1 yr of insurance for residential structures range from \$12.50 for \$5,000 worth of coverage to \$88.50 for the maximum coverage of \$100,000. For commercial structures, costs range from \$63 for \$5,000 worth of coverage to \$348 for \$100,000 worth of coverage. The maximum coverage will be increased to \$150,000 for residential structures and \$250,000 for commercial structures pending publication of the regulation. There is a \$250 deductible for residential structures and a \$500 deductible for commercial structures.

There were approximately 40,000 policyholders as of late 1992. In the bituminous region for the past 10 years, annual claims actually related to subsidence as a percentage of total claims submitted were about 30%. In the anthracite region, this percentage was about 5% (Schnurr 1991, Ruane 1992). These percentages have been highly variable because the number of subsidence events varies from year to year. Currently, the fund has about \$11.5 million in surplus.

### West Virginia

Mining was occurring in West Virginia before it became a State in 1863. West Virginia has the largest coal deposits in the northern Appalachian Coalfield. A total of 40 out of 55 counties in West Virginia have coal reserves that are economically important. In fact, 69% of West Virginia, or 16,800 square miles, overlies coal deposits (Energy Information Administration 1989).

In 1982, West Virginia passed legislation that created the Mine Subsidence Insurance Fund. This legislation also directed insurance companies licensed in West Virginia to offer mine subsidence insurance. The fund was established with State-appropriated money. The Mine Subsidence Insurance Fund, which reimburses the insurance companies, is operated by West Virginia's Board of Risk and Insurance Management.

Mine subsidence insurance can be obtained for residential and commercial structures located in any of 40 counties in West Virginia. Mine subsidence is defined as the collapse of underground coal mines. Mine subsidence insurance is voluntary. The amount of subsidence insurance coverage on a structure must be no

less than the amount of the regular property insurance coverage up to a maximum of \$75,000. The cost of subsidence insurance for residential structures ranges from \$10 for \$10,000 or less worth of coverage to \$23 for \$75,000 worth of coverage. For commercial structures, the cost ranges from \$20 for \$10,000 or less worth of coverage to \$46 for \$75,000 worth of coverage. There is a \$250 deductible on all paid subsidence claims.

There were 110,000 policyholders as of December 1992. Since 1983, 1,050 subsidence claims have been filed. Approximately 168, or 16%, of the 1,050 claims have been valid, about 602 have been invalid, and approximately 280 are still pending. Currently, the fund has approximately \$10 million in surplus.

### Wyoming

Coal mining in Wyoming started in the 1860's. There are about 15,000 people on approximately 1,000 acres overlying abandoned mines. Wyoming's Abandoned Mined Land Program is working to reduce the potential for subsidence in these towns by backfilling and/or grouting the mine voids.

In 1986, Wyoming created the Wyoming Mine Subsidence Insurance Program. Wyoming's program was started with seed money from the Federal Government (Barnard 1991). The Wyoming Mine Subsidence Insurance Program operates under the Abandoned Mined Land Program of the Land Quality Division, Department of Environmental Quality (Wyoming Mine Subsidence Insurance Program 1987).

Subsidence insurance coverage can be purchased for residential and commercial structures. The program recognizes mine subsidence as collapse of underground coal mines. Wyoming's subsidence program is voluntary. Insurance coverage cannot be purchased for less than 75% of the structure's estimated value nor for more than the structure's estimated value up to a maximum of \$150,000. The annual premium rates for structures are \$2 per \$1,000 for residential coverage and \$3 per \$1,000 for commercial coverage. Subsidence claims on residential structures are paid out minus 1% of the amount of insurance purchased with a minimum deductible of \$250 and a maximum of \$500. Deductibles for commercial structures are also 1% of the amount of the insurance purchased with a minimum of \$250, but the maximum is \$1,000.

There were about 1,000 policyholders as of December 1992. There have been 82 claims filed. About 53 claims, or 65%, have been valid subsidence claims, 24 claims have been invalid, while 5 claims are pending. Currently, the surplus of fund totals about \$1.7 million.

### Summary

The objective of this report is to compile and summarize all the mine subsidence insurance programs in the United States. It is important to note that the Bureau's intention is not to evaluate or rank each subsidence program by comparison, but rather to summarize in one report all the programs in existence for a source of reference. Information in this report should be used as a platform for States considering starting a subsidence program or for States that want proven ideas to modify their existing programs. In addition, coal companies should find this information useful in dealings with the local communities. Property owners can use this report as an initial reference to answer questions and/or further pursue insurance coverage. Table 1 summarizes the major aspects of all eight subsidence insurance programs. A list of addresses and telephone numbers of the agencies affiliated with each program can be obtained from the author.

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Table 1. Summary of mine subsidence insurance program.

Item	Colorado	Illinois	Indiana	Kentucky	Ohio	Pennsylvania	West Virginia	Wyoming
Start of program . . . . .	1988	1979	1986	1986	1987	1961	1983	1986
Source of funds . . . . .	Federal	State	Federal	Federal	State, Federal	State	State	Federal
Administered by . . . . .	State insurance company	Insurance association	State insurance companies	State insurance companies	State insurance companies	State	State insurance companies	State insurance companies
What is insurable . . . . .	R	R, C	R, C	R, C	R	R, C	R, C	R, C
Type of subsidence . . . . .	Coal	Coal, clay, limestone, fluorspar, etc.	Coal	Coal	Coal, clay, limestone, salt, etc.	Coal, clay	Coal	Coal
Maximum coverage . . . . .	\$50,000	\$350,000	\$75,000	\$50,000	\$50,000	\$100,000	\$75,000	\$150,000
Annual fee:								
Residential . . . . .	\$35 <sup>1</sup>	\$8-\$53	\$15-\$27	\$15-\$22	\$3-\$12	\$12-\$88	\$10-\$23	( <sup>2</sup> )
Commercial . . . . .	NAp	\$8-\$53	\$24-\$48	\$24-\$38	NAp	\$63-\$348	\$20-\$46	( <sup>3</sup> )
Deductible:								
Residential . . . . .	\$1,000	\$500	\$250-\$500	\$250-\$500	\$250-\$500	\$250	\$250	\$250-\$500
Commercial . . . . .	NAp	\$500	\$250-\$500	\$250-\$500	NAp	\$500	\$250	\$250-\$1,000
Participation . . . . .	Voluntary	Mandatory <sup>4</sup>	Mandatory <sup>4</sup>	Mandatory <sup>4</sup>	( <sup>5</sup> )	Voluntary	Mandatory <sup>4</sup>	Voluntary
Number of policyholders	1,100	350,000	60,000	37,000	13,000	40,000	110,000	1,000
Fund balance . . . . .	\$3 million	\$1.1 million	\$2 million	\$5.2 million	\$0 <sup>6</sup>	\$11.5 million	\$10 million	\$1.7 million

C = Commercial structures, NAp = Not applicable, R = Residential structures.

<sup>1</sup>There is a one-time initial \$125 inspection fee.

<sup>2</sup>Fee is \$2 per \$1,000 of coverage.

<sup>3</sup>Fee is \$3 per \$1,000 of coverage.

<sup>4</sup>Unless waived.

<sup>5</sup>Mandatory in 27 counties, voluntary in 10 others.

<sup>6</sup>Owing to 1992 restructuring of program; a subsequent surplus was projected.