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EPRI Research on Coal Combustion Products Uses

EPRI's coal combustion product (CCP) use research examines opportunities for beneficial uses of CCPs in agriculture, road construction, buildings, and other applications. Organized by topical area, this index provides a comprehensive list of CCP use research reports and allows quick access to information and results. To view these documents electronically, go to **www.epri.com** and search for the product ID number.

TOPIC	PUBLISHING INFORMATION	
General		
Impact of Air Emissions Controls on Coal Combustion Products	1015544	2008
A Review of Literature Related to the Use of Spray Dryer Absorber Material	1014915	2007
A Review of Manufacturing Uses for Gypsum Produced by Flue Gas Desulfurization Systems	1010384	2006
Proceedings: 15th International American Coal Ash Association Symposium on Management and Use of Coal Combustion Products (CCPs): Building Partnerships for Sustainability, Volume 2	1007954	2003
Proceedings: 15th International American Coal Ash Association Symposium on Management and Use of Coal Combustion Products (CCPs): Building Partnerships for Sustainability, Volume 1	1004699	2003
Non-Concrete Applications of Coal Ash: Fills, Roadbases, Mine Applications, and More	1007340	2002
Alternative By-Products from Flue Gas Desulfurization Systems: Utilization of Clean Coal By-Products from SO_2 Control Processes	1004611	2001
Proceedings: 14th International Symposium on Management and Use of Coal Combustion Products (CCPs), Volume 1	1001158	2001
Proceedings: 14th International Symposium on Management and Use of Coal Combustion Products (CCPs): Volume 2	1001183	2001
Guidelines for the Beneficial Use of Advanced SO_2 Control By-Products	TR-108403	1997
Demonstration of Ash Utilization in the State of North Dakota	TR-106516	1996
Proceedings: 11th International Symposium on Use and Management of Coal Combustion By-Products (CCBs): Volumes 1 and 2	TR-104657-V1	1994
Proceedings: 11th International Symposium on Use and Management of Coal Combustion By-Products (CCBs): Volumes 1 and 2	TR-104657-V2	1994
Low-Cost Ash-Derived Construction Materials: State-of-the-Art Assessment	TR-100563	1992
Proceedings: Eighth International Ash Utilization Symposium, Volumes 1 and 2	CS-5362-V1	1987
Proceedings: Eighth International Ash Utilization Symposium, Volumes 1 and 2	CS-5362-V2	1987
Utilization Potential of Advanced SO_2 Control By Products	CS-5269	1987
High-Volume Fly Ash Utilization Program Guidelines	CS-4763	1986
Coal Combustion By-products Utilization Manual, Volume 1: Evaluating the Utilization Option	CS-3122-V1	1983
Cement and Concrete		
The Effects of Potassium Acetate De-Icing Chemicals on the Performance of Concrete Containing Fly Ash	1018167	2008
Evaluation of the Effectiveness of High-Calcium Fly Ashes in Reducing Expansion Due to Alkali-Silica Reaction (ASR) in Concrete	1014271	2008
Use of Class C Fly Ash in High-Volume Fly Ash Concrete Applications	1014914	2007
Feasibility of Ternary Blends with Class C Fly Ash for High Performance Concrete	1004408	2004
Using Coal Ash to Mitigate Alkali Silica Reactivity	1008056	2003
Improving Flowable Fills with Coal Ash	1008055	2003
The Role of High Calcium Fly Ashes in Controlling Alkali-Silica Reactions in Concrete	1004407	2002
Development of Ternary Blends for High Performance Concrete	1004077	2002
CANMET/Industry Research Consortium on Alkali-Aggregate Reactivity in Concrete	1004031	2001

TOPIC	PUBLISHING INFORMATION	
Cement and Concrete (cont.)		
Development of High-Volume Fly Ash Blended Cements	1004030	2001
Mechanical Properties and Durability of Concrete Made with High-Volume Fly Ash Blended Cement Produced in a Cement Plant: Commercial-Scale Trial Results	1000643	2000
Evaluation of New Air-entraining Admixtures for Concrete Incorporating Fly Ash with High Carbon Contents	1000569	2000
Evaluation of Existing Structural Design Methods for AAC Panels: Designing with Autoclaved Aerated Concrete	1000306	2000
High Volume Fly Ash Blended Cements: Status Report	TE-114025	1999
Investigation on the Parameters Affecting the De-Icing Salt Scaling Resistance of Fly Ash Concrete	TR-110809	1998
1998 Summary of Consortium on Alkali-Aggregate Reactivity in Concrete	TR-112453	1998
CANMET/Industry Research Consortium on Alkali-Aggregate Reactivity	TR-109132	1997
Investigation on Lightweight High-Volume Fly Ash Concrete	TR-107685	1996
Investigation of High-Volume Fly Ash Concrete Systems	TR-103151	1993
High-Volume Fly Ash Concrete Technology	TR-100473	1992
Utilization of Coal Combustion By-Products for Masonry Construction	TR-100707	1992
Ash-in-Concrete Model Development	GS-6129	1988
Evaluation of Pozzolanic Applications for Leached Fly Ash	CS-5982	1988
Classification of Fly Ash for Use in Cement and Concrete	CS-5116	1987
High-Volume Fly Ash Utilization Projects in the United States and Canada: Second Edition	CS-4446-NDV2	1985
Testing and Correlation of Fly Ash Properties with Respect to Pozzolanic Behavior	CS-3314	1983
Road and Highway Applications		
Soil Stabilization with Fly Ash	1010386	2006
Environmental Evaluation for Use of Ash in Soil Stabilization Applications	1005213	2001
Concrete Applications of Coal Ash: Highway Structures and Pavement	1004696	2002
Use of Spray Dryer By-Product in Road Construction: Minnesota Demonstration	TR-108402	1997
Use of FGD Gypsum and Bottom Ash in Roadway and Building Construction	TR-105236	1995
Environmental Performance Assessment of Coal Combustion Byproduct Use Sites: Road Construction Applications	TR-105127	1995
Use of FGD Gypsum and Bottom Ash in Roadway and Building Construction	TR-103856	1994
Fly Ash Design Manual for Road and Site Applications: Volumes 1 and 2	TR-100472-V1	1992
Fly Ash Design Manual for Road and Site Applications: Volumes 1 and 2	TR-100472-V2	1992
Use of Coal Ash in Highway Construction: Michigan Demonstration Project	GS-7175	1990
Use of Ash in Highway Construction: Delaware Demonstration Project	GS-6540	1989
Ash Utilization in Highways: Delaware Demonstration Project	GS-6481	1989
Ash Utilization in Highways: Pennsylvania Demonstration Project	GS-6431	1989
Use of Coal Ash in Highway Construction: Kansas Demonstration Project	GS-6460	1989
Use of Coal Ash in Highway Construction: Michigan Demonstration Project	GS-6155	1988
Use of Coal Ash in Highway Construction: Georgia Demonstration Project	GS-6175	1988
Structural Fills and Mine Fills		
Omega Mine Injection Program: Monongalia County, West Virginia	1004032	2001
Fluid Placement of Fixated Scrubber Sludge in Abandoned Deep Mines To Abate Surface Subsidence and Reduce Acid Mine Drainage	TR-107053	1996
Environmental Performance Assessment of Coal Ash Use Sites	TB-103178	1993
Environmental Performance Assessment of Coal Ash Use Sites: Waukegan Ash Embankment	EN-6533	1990
Environmental Performance Assessment of Coal Ash Use Sites: Little Canada Structural Ash Fill	EN-6532	1990
Stabilization of Power Plant By-Product Storage Sites for Building Development	CS-3475	1984

TOPIC	PUBLISHING INFORMATION	
Agriculture and Land Applications		
Flue Gas Desulfurization Gypsum Agricultural Network	1015777	2008
Use of Flue Gas Desulfurization Products in Agricultural Applications	1012698	2007
A Review of Agricultural and Other Land Application Uses of Flue Gas Desulfurization Products	1010385	2006
Horticultural Applications of Coal Ash	1004852	2003
Guidelines for Using Ash/Organic Waste Mixtures in Horticulture and Turf Production	1004398	2002
Ash-Derived Zeolites for Odor Control and Fertilizer Delivery	1004401	2002
Using Zeolites Synthesized from Fly Ash to Reduce Ammonia Loss to the Environment	1004078	2002
Coal Combustion and Organic By-Product Blends as Soil Substitutes / Amendments for Horticulture	1004058	2001
Environmental Monitoring of Abandoned Mined Land Revegetated Using Dry FGD By-Products and Yard Waste Compost	1000721	2000
Business Plan for Utilization of Coal Combustion By-Products (CCBP) - Biosolids Blends in Horticultural Markets	TE-113972	1999
Restoration of Eroded Land Using Coal Fly Ash and Biosolids	TR-113940	1999
Land Application Uses for Dry Flue Gas Desulfurization By-Products: Phase 3	TR-112916	1999
Utilization of Coal Combustion By-Products in Agriculture and Land Reclamation	TR-112746	1999
Coal Ash Utilization for Soil Amendment to Enhance Water Relations and Turf Growth	TR-111318	1998
Land Application Uses for Dry Flue Gas Desulfurization By-Products: Phase 2	TR-109652	1997
Mixtures of a Coal Combustion By-Product and Composted Yard Wastes for Use as Soil Substitutes and Amendments	TR-106682	1996
Land Application Uses for Dry Flue Gas Desulfurization By-Products	TR-105264	1995
Land Application of Coal Combustion By-Products: Use in Agriculture and Land Reclamation	TR-103298	1995
Analysis of Markets for Coal Combustion By-Products Use in Agriculture and Land Reclamation: Summary Report of Four Regional Marketing Studies	TR-102575	1993
Metal Composites		
Aluminum - Fly Ash Metal Matrix Composites as Advanced Automobile Material	1004059	2001
Development of New Industrial Ashalloy Material Using Fly Ash Cenospheres "Lead-Lite" Project	TE-114154	1999
Development of New Industrial Ashalloy Material Using Fly-Ash Cenospheres	TR-109042	1997
Infiltration Processing of Metal Matrix-Fly Ash Particle Composites	TR-108531	1997
Casting of ASHALLOY Metal Matrix Composites: 1994	TR-106168	1994
Solidification Processing of Metal Matrix - Fly Ash Particle Composites	TR-104409	1994
Market Opportunities for Fly Ash Fillers in North America	GS-7059	1990
Miscellaneous		
Organic and Inorganic Hazardous Waste Stabilization Using Coal Combustion By-Product Materials	TR-103958	1994
Recovery of Metal Oxides from Fly Ash Including Ash Beneficiation Products, Volumes 1-3	CS-4384-V1	1985
Recovery of Metal Oxides from Fly Ash Including Ash Beneficiation Products, Volumes 1-3	CS-4384-V2	1985
Recovery of Metal Oxides from Fly Ash Including Ash Beneficiation Products, Volumes 1-3	CS-4384-V3	1985
Coal-Waste Artificial Reef Program	CS-3936	1985
Carbon in Fly Ash		
Scale-up and Demonstration of Fly Ash Ozonation Technology	1012995	2005
Carbon-in-Ash Monitor Demonstration—An Update	1009911	2004
New Air-Entraining Admixtures for Concrete Using High-Carbon Fly Ash	1004596	2002
Coal Ash Carbon Removal Technologies	1006565	2001
Triboelectric Fly Ash Beneficiation: Summary Report, Phase IV	1000568	2000
Fly Ash Properties from the J. P. Madgett Station and the Potential for Beneficiation by Surface Treatment	1001073	2000
Carbon-in-Ash Monitor Demonstration	1000763	2000
Triboelectric Fly Ash Beneficiation, Phase III Status Report	TE-114556	1999

TOPIC	PUBLISHING INFORMATION	
Carbon in Fly Ash (cont.)		
Economics of the Triboelectric Ash Beneficiation System	TE-113673	1999
Triboelectric Fly Ash Beneficiation, Phase II Report	TR-111647	1998
Use of High Carbon Fly Ash as a Component of Raw Mix for Cement Manufacture	TR-110808	1998
Evaluation of Concrete Containing Fly Ash With High Carbon Content and/or Small Amounts of Wood	TR-110633	1998
Dry Triboelectric Separation of Carbon from Fly Ash: Proof-of-Concept Testing	TR-109016	1997
Ammoniated Fly Ash		
Ammonia Removal from Fly Ash: Process Review	1012697	2007
Short-Term Variability of Ammonia In Fly Ash	1008309	2004
Novel Ash Beneficiation Processes for Managing Unburned Carbon and Ammonia	1004395	2002
State-of-Knowledge of Fate, Removal, and Impact of Ammonia in Ash	1004700	2002
Behavior of Ammoniated Fly Ash: Effects of Ammonia on Fly Ash Handling, Disposal, and End-Use	1003981	2002
Investigation of Ammonia Adsorption on Fly Ash and Potential Impacts of Ammoniated Ash	TR-113777	1999
Assessment of Impacts of NOx Reduction Technologies on Coal Ash Use: Volume 1: North American Perspective	TR-106747-V1	1996
Assessment of Impacts of NOx Reduction Technologies on Coal Ash Use: Volume 2: European Perspective	TR-106747-V2	1996
Mercury in Fly Ash and FGD Solids		
Mercury Release from Concretes Containing Fly Ash and Powdered Activated Carbon Sorbents	1016937	2008
Mercury Leachability From Concretes That Contain Fly Ashes and Activated Carbon Sorbents	1014913	2007
Mercury Emissions from Curing Concretes that Contain Fly Ash and Activated Carbon Sorbents	1012696	2006
Mercury Emissions During Steam-Curing of Cellular Concretes that Contain Fly Ash and Mercury-Loaded Powdered Activated Carbon	1008308	2005
Mercury Emissions From Cement Kilns Using Fly Ash as Feedstock	1011289	2004
Mercury Emissions from Concrete Containing Fly Ash and Mercury-Loaded Powdered Activated Carbon	1004402	2003
Release of Mercury During Curing of Concrete Containing Fly Ash and Mercury Sorbent Material	1004697	2002
Impact of Mercury Controls on Coal Combustion By-Product Utilization	1004610	2001

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