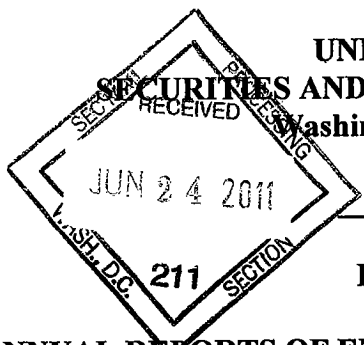




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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 11-K

**FOR ANNUAL REPORTS OF EMPLOYEE STOCK PURCHASE, SAVINGS
AND SIMILAR PLANS PURSUANT TO SECTION 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934**

(Mark One):

ANNUAL REPORT PURSUANT TO SECTION 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2010

OR

TRANSITION REPORT PURSUANT TO SECTION 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission file number 1-14601

A. Full title of the plan and the address of the plan, if different from that of the issuer named below:

ARCH CHEMICALS, INC. CONTRIBUTING EMPLOYEE OWNERSHIP PLAN

B. Name of issuer of the securities held pursuant to the plan and the address of its principal executive office:

Arch Chemicals, Inc.
501 Merritt 7
Norwalk, Connecticut 06851

EXHIBIT INDEX IS P. 22
TOTAL PAGES = 24

REQUIRED INFORMATION

**ARCH CHEMICALS, INC. CONTRIBUTING
EMPLOYEE OWNERSHIP PLAN**

Financial Statements and Supplemental Schedule

December 31, 2010 and 2009

(With Report of Independent Registered
Public Accounting Firm Thereon)

Report of Independent Registered Public Accounting Firm

The Administrator
Arch Chemicals, Inc. Contributing Employee Ownership Plan:

We have audited the accompanying statements of net assets available for plan benefits of the Arch Chemicals, Inc. Contributing Employee Ownership Plan (the Plan) as of December 31, 2010 and 2009, and the related statements of changes in net assets available for plan benefits for the years then ended. These financial statements are the responsibility of the Plan's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the net assets available for plan benefits of the Plan as of December 31, 2010 and 2009, and the changes in net assets available for plan benefits for the years then ended in conformity with U.S. generally accepted accounting principles.

Our audits were performed for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplemental Schedule H, Line 4i – Schedule of Assets (Held at End of Year) is presented for the purpose of additional analysis and is not a required part of the basic financial statements but is supplementary information required by the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act 1974. This supplemental schedule is the responsibility of the Plan's management. The supplemental schedule has been subjected to the auditing procedures applied in audits of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

KPMG LLP

Stamford, Connecticut
June 22, 2011

**ARCH CHEMICALS, INC. CONTRIBUTING
EMPLOYEE OWNERSHIP PLAN**

Statements of Net Assets Available for Plan Benefits

December 31, 2010 and 2009

	2010	2009
Assets:		
Investments, at fair value (notes 4 and 9):		
Mutual funds	\$ 104,681,057	93,328,924
Common/collective trusts	63,490,176	56,027,644
Common stock	48,233,731	41,041,660
	216,404,964	190,398,228
Total investments, at fair value		
Notes receivable from participants	5,113,988	4,451,921
Employer contribution receivable	2,161,630	789,357
Employee contribution receivable	1,177	—
	223,681,759	195,639,506
Net assets available for plan benefits (with investments at fair value)		
Adjustment from fair value to contract value for fully benefit-responsive investment contracts	286,463	1,085,372
Net assets available for plan benefits	\$ 223,968,222	196,724,878

See accompanying notes to financial statements.

**ARCH CHEMICALS, INC. CONTRIBUTING
EMPLOYEE OWNERSHIP PLAN**

Statements of Changes in Net Assets Available for Plan Benefits

Years ended December 31, 2010 and 2009

	2010	2009
Additions (deductions) to net assets attributed to:		
Investment income (note 4):		
Net appreciation in fair value of investments	\$ 22,310,486	29,947,215
Dividends	4,355,219	3,486,298
Interest	496,054	458,969
Net investment income	27,161,759	33,892,482
Interest from notes receivable from participants	212,089	238,986
Contributions:		
Participant	8,231,719	7,795,140
Employer	5,400,509	3,894,627
Rollover	179,996	3,368,521
Total contributions	13,812,224	15,058,288
Administrative and other expenses	(248,662)	(205,509)
Benefits paid to participants in cash	(13,314,501)	(6,808,046)
Benefits paid to participants in stock	(206,618)	(1,264)
Transfers out to other plan	(172,947)	(228,220)
Net increase	27,243,344	41,946,717
Net assets available for plan benefits at beginning of year	196,724,878	154,778,161
Net assets available for plan benefits at end of year	\$ 223,968,222	196,724,878

See accompanying notes to financial statements.

**ARCH CHEMICALS, INC. CONTRIBUTING
EMPLOYEE OWNERSHIP PLAN**

Notes to Financial Statements

December 31, 2010 and 2009

(1) Summary of Significant Accounting Policies

(a) Basis of Presentation

The accompanying financial statements have been prepared on the accrual basis.

(b) Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and changes therein, and disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

(c) Asset Valuation and Income Recognition

Arch Chemicals, Inc. Contributing Employee Ownership Plan's (the Plan or CEOP) investments are stated at fair value. Participant loans are stated at cost plus accrued interest, which approximates fair value given the interest rates and maturity dates of such loans. See note 9 for further discussion.

Purchases and sales of securities are recorded on a trade-date basis. All income is determined on an accrual basis. Interest accrues daily and dividends are recorded on the ex-dividend date.

(d) Benefit Payments

Benefit payments are recorded when paid.

(2) Description of the Plan

The following description of the Arch Chemicals, Inc. (Arch, the Plan Sponsor or the Employer) Contributing Employee Ownership Plan (the Plan or CEOP) provides only general information. Participants should refer to the Plan Prospectus/Summary Plan Description for a more complete description of the Plan's provisions.

(a) General

The Plan is a defined contribution plan sponsored by Arch and is intended to satisfy the qualification requirements under Sections 401(a) and 401(k) of the Internal Revenue Code of 1986, as amended (the Code). In addition, a portion of the Plan is intended to qualify as an employee stock ownership plan (ESOP) under Section 4975(e)(7) of the Code. The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974, as amended (ERISA). The Plan is administered by the Arch CEOP Administrative Committee.

On February 8, 1999, Olin Corporation (Olin) completed the spin-off of its specialty chemical businesses as Arch.

On January 22, 2001, Arch adopted the CEOP, a single employer plan. Effective March 1, 2001, Arch was no longer a participating employer in the Olin Corporation Contributing Employee Ownership Plan (Olin CEOP) and all Arch participant balances were transferred to the CEOP.

**ARCH CHEMICALS, INC. CONTRIBUTING
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December 31, 2010 and 2009

On October 10, 2008 Arch completed the acquisition of the water treatment chemicals business of Advantis, a North American manufacturer and marketer of branded swimming pool, spa and surface water treatment chemicals. During 2010 and 2009, \$0 and \$2,947,611 was rolled over by former Advantis employees.

(b) Participation and Contributions

Effective April 30, 2010, employees of the Employer and certain subsidiaries of the Employer are eligible to participate in the Plan 15 days after their date of hire. Prior to April 30, 2010, employees were eligible to participate on the day coinciding with their date of hire.

Participants can make both tax-deferred contributions and after-tax contributions, the earnings on which are taxable. Effective December 1, 2009, participants can also make after-tax Roth 401(k) contributions to the Plan, the earnings on which are not taxable. For 2010 and 2009, the maximum amount of combined tax-deferred and/or Roth 401(k) contributions that could have been made to the CEOP was \$16,500. The maximum amount of tax deferred and/or Roth 401(k) contributions is based on IRS guidelines and is calculated based on eligible pay and the percentage of participant pay elected to contribute to the Plan. Combined tax-deferred and after-tax contributions may not exceed 75% of participants' eligible compensation, up to statutory limits. Due to the adoption of a "safe harbor" matching contribution which has enabled the Plan to qualify as a Qualified Automatic Contribution Arrangement (QACA), there are no restrictions on contributions by highly compensated employees, as defined.

Participants who are age 50 and older at any time during a Plan year may make "catch-up contributions" in that year. These contributions are additional tax-deferred contributions that eligible participants are permitted to make in excess of the annual IRS tax-deferred contribution limit. For 2010 and 2009, the maximum amount of "catch-up contributions" was \$5,500. Additionally, "catch-up contributions" are eligible for employer matching contributions due to the adoption of the "safe harbor" matching contribution.

The Employer provides a matching contribution of 100% of a participant's first 1% of eligible pay and 50% of a participants' contributions from 2% to 6% of eligible pay contributed to the Plan. Arch also provides an annual performance match, which is based on Arch's actual earnings per share (EPS) as a percent of the target EPS as established by the Compensation Committee each year. The performance matching contribution totaled \$2,161,630 and \$789,357 for the Plan years ended December 31, 2010 and 2009, respectively. All Employer matching contributions are invested in the Arch Common Stock Fund. Participants who are at least 50 years old but have not been credited with three years of service may elect to transfer balances attributable to Employer matching contributions out of the Arch Common Stock Fund once every 12 months. Participants who have been credited with at least three years of service may elect to transfer anytime (subject to applicable US securities laws) the value of their Employer matching contributions out of the Arch Common Stock Fund to any other fund(s) available in the Plan.

**ARCH CHEMICALS, INC. CONTRIBUTING
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(c) Investment Elections

During 2010 and 2009, the amounts contributed to the Plan were invested in one or more of the following investment options at the direction of the participants, except for Employer matching contributions as discussed above. Below is a description of each investment option offered by the Plan:

JP Morgan Stable Asset Income Fund – This fund seeks to preserve the value of money invested, perform better than the average money market fund, and earn consistent returns. The fund invests in a variety of interest-paying securities offered with a companion investment contract called a “benefit responsive wrap.” See footnote 2(f).

PIMCO Total Return Fund – This fund seeks total return consistent with preservation of capital. The fund invests at least 65% of its assets in a diversified portfolio of fixed income instruments of varying maturities, including bonds, debt securities and other similar instruments issued by various U.S. and non-U.S. public- or private-sector entities. It may invest up to 30% of its assets in securities denominated in foreign currencies.

PIMCO Real Return Fund – The fund seeks maximum real return, consistent with preservation of real capital and prudent investment management. The fund invests under normal circumstances at least 80% of its net assets in inflation-indexed bonds of varying maturities issued by the U.S. and non-U.S. governments, their agencies or instrumentalities, and corporations. The fund may invest up to 30% of its total assets in securities denominated in foreign currencies.

BlackRock S&P 500 Equity Index Fund-I – The fund seeks to capture earnings and growth through investing in the same stocks held in the S&P 500 Index. These stocks represent 500 of the largest and most established public companies in the U.S. (based on the market value of their shares), and account for more than 75% of the market capitalization of all publicly traded stocks in the U.S.

T. Rowe Price Equity Income Fund – This fund’s objective is to provide dividend income as well as long-term capital appreciation through investments in common stocks of established companies. The fund pursues this objective by investing at least 80% of the fund’s net assets in common stocks, with 65% in the common stocks of companies paying above-average dividends, with prospects for both increasing dividends and capital appreciation.

American Funds Growth Fund of America – This fund seeks to invest in companies that offer opportunities for long-term growth, such as cyclical companies, those in depressed industries, and turnaround or value situations. Common stocks, convertibles, preferred stocks, U.S. government securities, bonds and cash are held by the fund. Up to 25% of the assets may be invested in securities of issuers located outside the United States and not included in the S&P 500. Up to 10% may be invested in debt securities rated below investment grade.

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Perkins Mid Cap Value Fund – This fund seeks capital appreciation by primarily investing in the common stocks of mid-sized companies whose stock prices the managers believe to be undervalued. The fund invests at least 80% of its assets in equity securities of companies whose market capitalization falls at the time of purchase, within the 12-months average of the capitalization range of the Russell Midcap Value Index. These companies generally have a low price relative to their assets, earnings, cash flow or business franchise.

Turner Midcap Growth Fund – The fund seeks capital appreciation. The fund invests primarily (at least 80% of its net assets) in common stocks of equity securities of U.S. companies with medium market capitalizations that the fund believes has strong earnings growth potential.

Managers Special Equity Fund – This fund seeks long-term capital appreciation by investing primarily in common stocks of U.S. companies. These companies have small to medium-market capitalizations and are in the early stages of their corporate life cycle or are not yet well recognized, or they may be more established firms experiencing accelerated earnings growth. Investment in this fund was discontinued and replaced with the Wells Fargo Advantage Small Cap Growth Fund (see description below) effective July 10, 2009.

Wells Fargo Advantage Small Cap Growth Fund – Effective July 10, 2009, this fund replaced the Managers Special Equity Fund. This investment seeks long-term capital appreciation. Under normal circumstances, it invests at least 80% of the net assets in equity securities of small-capitalization companies with market capitalization of less than \$2 billion (measured at the time of purchase). The fund's investment strategy is to identify and invest in rapidly growing small capitalization companies that are in an early or transitional stage of their development.

Target Small Capitalization Value Fund – The fund seeks investments that will increase in value. To achieve the objective, the fund invests in stocks of small companies that are believed to be undervalued and have an above-average potential to increase in price, given the company's sales, earnings, book value, cash flow and recent performance. The fund normally invests at least 80% of its assets in common stocks of companies with market capitalizations comparable to those in the Russell 2000 Value Index.

Harbor International Fund – This fund seeks long-term return from growth of capital. The fund invests primarily (no less than 65% of its total assets) in equity securities, principally common and preferred stocks of foreign companies, including those located in emerging market countries. Companies in the fund's portfolio generally have market capitalizations in excess of \$1 billion. The manager uses a value oriented bottom-up approach, researching and evaluating individual companies.

American Funds EuroPacific Growth Fund – This fund seeks growth of capital by investing in attractively valued companies that, in its opinion, represent good, long-term investment opportunities. Generally, the fund invests at least 80% of its assets in equity securities of issuers located in Europe and the Pacific Basin. The fund may hold cash money market instruments and other fixed income securities.

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Arch Common Stock Fund – This fund invests in the publicly traded common stock of Arch Chemicals, Inc. (the Plan Sponsor). See footnote 2(e) for further description of the provisions and restrictions of the fund.

Arch Pre-mixed Portfolio (Conservative) – This investment option is a pre-mixed portfolio created specifically for the CEOP, using the Plan's other available investment options. It is designed to seek a balance of modest returns and low volatility by investing in a diversified mix of funds emphasizing income related investments. The Plan's fixed income options make up the largest portion of the portfolio (60%) but it also is invested in stock funds (40%) to provide the potential for growth as well as increased diversification. As this investment option is a pre-mixed portfolio using the Plan's other available investment options, amounts invested through this investment option are included in the balances of the other options in these financial statements and footnotes and in Schedule H, Line 4i.

Arch Pre-mixed Portfolio (Moderate) – This investment option is a pre-mixed portfolio created specifically for the CEOP, using the Plan's other available investment options. It is designed to seek moderate returns by investing in a diversified mix of funds emphasizing both growth and income related investments. Stock funds make up 65% of the portfolio, emphasizing growth related investments. The stock holdings are broadly diversified across large U.S. companies, international companies and small U.S. companies. The portfolio also invests in fixed income options (35%) to provide diversification and reduce volatility while adding stability of principal and income. As this investment option is a pre-mixed portfolio using the Plan's other available investment options, amounts invested through this investment option are included in the balances of the other options in these financial statements and footnotes and in Schedule H, Line 4i.

Arch Pre-mixed Portfolio (Aggressive) – This investment option is a pre-mixed portfolio created specifically for the CEOP, using the Plan's other available investment options. It is designed to seek higher potential returns by investing in a diversified mix of funds emphasizing growth related investments. Stock funds make up 100% of the portfolio, and are broadly diversified across large U.S. companies, international companies and small U.S. companies. As this investment option is a pre-mixed portfolio using the Plan's other available investment options, amounts invested through this investment option are included in the balances of the other options in these financial statements and footnotes and in Schedule H, Line 4i.

Participant-directed brokerage account – This investment option which is operated by the Chase Investment Services Corp. gives participants the ability to select and invest in a number of publicly traded companies, fixed-income securities and over 10,000 mutual funds.

(d) Olin Common Stock Fund

Only Participants who were Participants in the Olin CEOP at the time of the spin-off of Arch from Olin may have account balances that are invested in the Olin Common Stock Fund. Such Participants may retain existing investments in the Olin Common Stock Fund, but no new contributions or

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December 31, 2010 and 2009

transfers may be made in or to this fund. Participants may transfer any portion of their Olin Common Stock Fund balances to any of the other funds offered by the Plan. Any dividends issued on the stock held in the Olin Common Stock Fund are automatically reinvested into the Arch Common Stock Fund.

(e) Arch Common Stock Fund

As of February 8, 1999, the specialty chemical businesses of Olin were spun off into a new publicly traded company, Arch Chemicals, Inc. In order to effect the spin-off, a stock dividend was issued to Olin shareholders, including participants in the Olin CEOP, of one share of Arch common stock for each two shares of Olin common stock then outstanding. These shares were deposited in the unitized Arch Common Stock Fund in the Olin CEOP.

As of the spin-off, each Plan participant having an account balance containing Olin common stock was credited with an opening account balance in the Arch Common Stock Fund. The amount credited to each participant's initial Arch Common Stock Fund account balance was calculated by (i) dividing the value of such participant's Olin Common Stock Fund account by the total value of all participants' accounts in the Olin Common Stock Fund, and then (ii) multiplying the percentage determined under (i) above by the value of the Arch common stock the Plan trustee received as a stock dividend. The balances in all Arch employees' accounts of the Arch Common Stock Fund were transferred to the Plan on March 1, 2001.

Dividends paid to participants are re-invested in the Arch Common Stock Fund. Each participant is entitled to exercise voting rights attributable to the shares of his or her account and is notified by the Trustee prior to the time such rights are to be exercised.

The number of shares in the Arch Common Stock Fund to be credited to a participant's account is determined by dividing the participant's contribution plus the amount of Employer matching contributions attributable to such contribution for the preceding pay cycle by the share value of a share as of the close of business on the date on which the contributions were credited. Additional shares are credited to a participant's account to reflect payment of dividends on the common shares credited to that account based on the value of a share as of the day the dividend is credited.

Effective November 1, 2009, the Plan was amended and the Arch Common Stock Fund was designated as the ESOP portion of the Plan.

(f) JPMorgan Stable Asset Income Fund

The JPMorgan Stable Asset Income Fund is a stable value fund that is a common collective trust fund. The fund may invest in guaranteed investment contracts (GICs and synthetic GICs), money market funds, corporate and government bonds, mortgage-backed securities, bond funds, and other fixed income securities. The contracts held by the fund are considered to be fully benefit-responsive investment contracts as defined in the Accounting Standards Codification (ASC) 946, *Financial Services – Investment Companies*. Participants may ordinarily direct the withdrawal or transfer of all or a portion of their investment at contract value. Contract value represents contributions made to the fund, plus accrued interest, less participant withdrawals.

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A synthetic GIC consists of two components: 1) a portfolio of bonds and other assets that are owned by the fund, and 2) contracts, also known as wrap contracts, that provide market and cash flow protection. The wrap contracts are obligated to provide an interest rate not less than zero. These contracts provide that realized and unrealized gains and losses on the underlying assets are not reflected in the net assets of the fund as part of the fair value, but rather amortized, over the duration of the underlying assets, through adjustments to the future interest crediting rate. The counterparties to the wrapper contracts held by the JPMorgan Stable Asset Income Fund are major financial institutions with credit ratings ranging from AA- to A at December 31, 2010.

At December 31, 2010 and 2009 there were three investment contracts held by the JPMorgan Stable Asset Income fund. The Plan's proportionate interest in each of the contracts had fair values of \$7,145,000 and \$6,437,000 at December 31, 2010 and 2009, respectively. These fair values represented the fair values of the Plan's proportionate interest in the underlying investments as none of the wrapper contracts had any value.

Factors that Impact Future Crediting Rates

The following factors impact the future crediting rates of wrap contracts:

- Duration of the underlying assets
- Difference between the market value and contract value of the underlying assets
- Current yield of the underlying assets

Basis and Frequency of Determining Interest Crediting Rates

The wrap contract crediting rates are reset on a calendar quarterly basis.

Terminations at Other than Contract Value

GICs generally do not permit issuers to terminate the agreement prior to the scheduled maturity date. Wrap contracts are evergreen contracts that contain termination provisions. Wrap agreements permit the fund's investment manager to terminate upon notice at any time at market value and provide for automatic termination of the wrap contract if the contract value or the market value of the contract equals zero. The issuer is not excused from paying the excess contract value when the market value equals zero.

Limitations on the Ability of the Fund to Transact at Contract Value

The fully benefit-responsive investment contracts provide that Plan participant initiated withdrawals permitted under the Plan will be paid at contract value. Wrap contracts provide for withdrawals associated with 1) certain events that are not in the ordinary course of Plan operations and 2) events that the issuer determines will have a material adverse effect on the issuer's financial interest. These withdrawals will be paid with a market value adjustment to the contract value amount of such withdrawal as defined in such contracts.

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Average Yield Calculation

	2010	2009
Average yield for JP Morgan Stable Asset Income Fund:		
Based on actual earnings*	2.81%	3.51%
Based on interest rate credited to participants**	2.47	2.17

* Computed by dividing the annualized earnings of the Fund by the fair value of the investments of the fund.

** Computed by dividing the annualized earnings credited to participants in the Fund by the fair value of the investments of the fund.

(g) Vesting and Benefit Provision

Participants are fully vested in their contributions to the Plan.

Participants become 100% vested in the Employer matching contributions and earnings thereon upon the completion of two years of service or as a result of death, total disability or attainment of age 65. Nonbargaining and certain bargaining participants can become partially vested in accordance with the schedule set forth below:

Years of service	Percentage vested
Less than one year	0%
One year but fewer than two	50
Two or more years	100

Upon termination of service for any reason, a participant may elect to receive his or her entire vested balance in either a lump-sum amount or in annual installments up to 15 years, or for his or her life expectancy, if greater.

Distributions from the Plan are generally paid in cash. Distributions from the Olin Common Stock Fund or Arch Common Stock Fund, at the election of the distributee, can be paid in shares of common stock with any fractional interest in a share of common stock paid in cash.

(h) Transfers between Funds

Participants may elect to transfer balances attributable to employee contributions from any fund to any other fund, except such participants may not transfer balances to the Olin Common Stock Fund. Participants may transfer balances daily, with no limitation on the frequency. A participant may elect to transfer any percentage of the balance in the fund from which the transfer is made.

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Participants who are at least 50 years old but have not been credited with three years of service may elect to transfer balances attributable to Employer matching contributions out of the Arch Common Stock Fund once every 12 months. Participants who have been credited with at least three years of service may elect to transfer at anytime, (subject to applicable US securities laws) the value of their Employer matching contributions out of the Arch Common Stock Fund to any other fund(s) available in the Plan.

(i) Participant Accounts

The Plan is a defined contribution plan under which a separate individual account is established for each participant's tax-deferred contributions and/or after-tax contributions including Roth 401(k) contributions, if any. Each participant's account is credited with the participant's contribution and allocations of (a) the Employer's matching contribution and (b) Plan investment fund(s) earnings (losses). Allocations are based on participant accounts balances, as defined. The benefit to which a participant is entitled is the benefit that can be provided from the participant's vested balance.

(j) Loan Provision

All eligible participants may participate in the loan program under the Plan. The maximum loan amount is generally the lesser of \$50,000 or 50% of the value of the participant's vested account balance. Under the Plan, employees may have a maximum of three outstanding loans at any time. The loans are funded from the participants' accounts, reducing the account balance by the loan amount, and are reflected as notes receivable from participants in the accompanying financial statements. The term of the loans may be up to five years, or up to 15 years if the purpose of the loan is the purchase of a primary residence. The interest rate on these loans is fixed at the current prime rate at the time the loan is originated. The interest rates on outstanding loans ranged from 3.25% to 9.50% in 2010 and 2009.

(k) Payment of Benefits

Upon termination of employment, death, attainment of age 59½, and certain hardships, as defined by the Plan, participants may elect to withdraw amounts from the Plan. In addition to attainment of age 59½ and hardship withdrawals, participants may also elect to withdraw their tax-deferred contributions and vested contributions as an "in-service" withdrawal, as defined in the Plan document. In order for earnings from participants' Roth 401(k) accounts to be tax-free when withdrawn, the participant's first Roth 401(k) contribution to the Plan must have existed for at least five years.

(l) Administrative and Other Expenses

Costs and expenses of administering the Plan are generally paid by the Plan. Certain administrative expenses are paid by the general assets of the Employer or by participants, as applicable.

(m) Trust Fund Management

JPMorgan Chase Bank, N.A. is the Trustee of the Plan. Under the terms of the Trust Agreement between the Trustee and Arch, the Trustee is responsible for the safekeeping of Plan assets in the

**ARCH CHEMICALS, INC. CONTRIBUTING
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trust funds and the maintenance of records relating to receipts and disbursements from the trust funds. The Trustee invests funds in compliance with the terms of the Plan and makes payments from the trust funds as directed by participants and Arch.

(n) Recordkeeper

JPMorgan Retirement Plan Services, LLC is the Recordkeeper for the Plan. There are revenue sharing agreements between certain funds and JPMorgan Chase Bank, N.A.

(o) Plan Termination

Although it has not expressed any intent to do so, the Employer has the right under the Plan to discontinue its contributions at any time and to terminate the Plan subject to the provisions of ERISA. In the event of Plan termination, participants will become 100% vested in their Employer matching contributions.

(3) Forfeitures of Employer Matching Contributions

Any forfeitures of nonvested Employer matching contributions and related earnings, equivalent to the market value of forfeited shares plus dividends not reinvested, will be applied to reduce subsequent Employer matching contributions. Forfeitures used to reduce Employer matching contributions were \$83,896 and \$74,086 for the Plan years ended December 31, 2010 and 2009, respectively. The unallocated balance of forfeitures was \$1,833 and \$9,654 at December 31, 2010 and 2009, respectively.

(4) Investments

The Plan's investments that exceeded 5% of net assets available for Plan benefits as of December 31, 2010 and 2009 are as follows:

Description of Investment	2010	2009
Arch Chemicals Common Stock Fund*	\$ 42,140,528	35,565,286
BlackRock S&P 500 Equity Index Fund-I	35,979,525	30,665,242
PIMCO Total Return Fund	29,685,199	25,737,692
American Funds Growth Fund of America	**	9,989,683
American Funds EuroPacific Growth Fund	13,733,418	11,718,911
JP Morgan Stable Asset Income Fund***	27,510,651	25,362,403
Harbor International Fund	**	10,382,912

* Includes nonparticipant-directed holdings

** Investment did not exceed 5% of net assets at year end

*** At fair value. Contract value was \$27,797,114 and \$26,447,775 at December 31, 2010 and 2009, respectively.

**ARCH CHEMICALS, INC. CONTRIBUTING
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The following table presents the net appreciation in fair value of investments (including investments bought, sold and held during the year) for the years ended December 31, 2010 and 2009, respectively:

	<u>Total</u>	
	<u>2010</u>	<u>2009</u>
Mutual funds	\$ 8,499,539	17,365,157
Common/collective trusts	4,746,139	6,460,796
Common stock	9,064,808	6,121,262
Total net appreciation	<u>\$ 22,310,486</u>	<u>29,947,215</u>

(5) Nonparticipant-Directed Investments

Information about the net assets and the significant components of the changes in net assets for nonparticipant-directed investments, are as follows:

	<u>2010</u>	<u>2009</u>
Arch Common Stock Fund net assets at beginning of year	\$ 35,565,286	27,681,006
Changes in net assets to the Arch Common Stock Fund:		
Employer contributions	4,069,729	3,905,828
Employee contributions—directed investments and net transfers in from other plans	437,934	516,160
Dividends	1,028,850	1,034,206
Net appreciation	8,119,574	5,976,387
Repayment of notes receivable from participants (principal and interest)	231,244	335,128
Benefits paid to participants and net transfers out	(2,399,201)	(1,288,789)
Administrative expenses	(1,963)	(1,320)
Loans issued	(210,689)	(157,272)
Other (disbursements) receipts	(4,439)	(37,830)
Transfers to participant—directed investments	(4,695,797)	(2,398,218)
Net increase	<u>6,575,242</u>	<u>7,884,280</u>
Arch Common Stock Fund net assets at end of year	<u>\$ 42,140,528</u>	<u>35,565,286</u>

(6) Federal Income Taxes

The Internal Revenue Service has determined and informed the Plan Sponsor by a letter dated September 5, 2003, that the Plan is qualified under Section 401(a) of the Code, as amended, and the related trust is exempt from Federal income taxes under Section 501(a) of the Code. Although the Plan has been amended since receiving the determination letter, the Plan administrator and the Plan's tax counsel believe

**ARCH CHEMICALS, INC. CONTRIBUTING
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Notes to Financial Statements

December 31, 2010 and 2009

that the Plan is designed and is currently being operated in compliance with the applicable requirements of the IRC.

Accounting principles generally accepted in the United States of America require plan management to evaluate tax positions taken by the Plan and recognize a tax liability (or derecognize an asset) if the Plan has taken an uncertain position that more likely than not would not be sustained upon examination by the Internal Revenue Service. The plan administrator has analyzed the tax positions taken by the Plan, and has concluded that as of December 31, 2010, there are no uncertain positions taken or expected to be taken that would require recognition of a liability (or derecognition of an asset) or disclosure in the financial statements.

(7) Related-Party Transactions

Certain Plan investments are shares of mutual funds and common/collective trusts managed by JPMorgan Chase Bank, N.A., the Plan trustee. In addition, the Plan invests in common stock of Arch. These transactions qualify as party-in-interest transactions that are exempt from the prohibited transaction rules.

(8) Reconciliation to Form 5500

	2010	2009
Net assets available for plan benefits per the financial statements	\$ 223,968,222	196,724,878
Less adjustment from fair value to contract value for fully benefit-responsive investment contracts	(286,463)	(1,085,372)
Net assets available for plan benefits per the Form 5500	\$ 223,681,759	195,639,506
	2010	2009
Change in net assets available for plan benefits per the financial statements	\$ 27,243,344	41,946,717
Less adjustment from contract value to fair value for fully benefit-responsive investment contracts – current year	(286,463)	(1,085,372)
Add adjustment from contract value to fair value for fully benefit-responsive investment contracts – prior year	1,085,372	2,411,849
Net income per the Form 5500	\$ 28,042,253	43,273,194

**ARCH CHEMICALS, INC. CONTRIBUTING
EMPLOYEE OWNERSHIP PLAN**

Notes to Financial Statements

December 31, 2010 and 2009

(9) Fair Value Measurements

Valuation techniques required by ASC 820, *Fair Value Measurements and Disclosures*, are based upon observable and unobservable inputs. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect the Plan's market assumptions. These two types of inputs create the following fair value hierarchy:

- Level 1 – Quoted prices (unadjusted) for identical assets and liabilities in active markets that the Plan has the ability to access at the measurement date.
- Level 2 – Quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in markets that are not active; and inputs other than quoted prices that are observable for the asset or liability, including interest rates, yield curves and credit risks, or inputs that are derived principally from or corroborated by observable market data through correlation.
- Level 3 – Significant inputs to the valuation model are unobservable and are primarily based on internally derived assumptions surrounding the timing and amount of expected cash flows.

The following section describes the valuation methodologies the Plan uses to measure different investments at fair value.

Investments

The Plan's investments are stated at fair value. Quoted prices in active markets are used to determine the fair values of investments, with the exception of the BlackRock S&P 500 Equity Index Fund-I and the JP Morgan Stable Asset Income Fund. The investments which are valued using quoted prices in active markets are included in Level 1.

The investment contracts held by the JP Morgan Stable Asset Income Fund are presented at fair value on the statements of net assets available for plan benefits. The investments in these fully benefit-responsive investment contracts are then adjusted to contract value, which is equal to the principal balance plus accrued interest, less participant withdrawals. An investment contract is generally valued at contract value, rather than fair value, to the extent it is fully benefit-responsive. Fair value of fully benefit-responsive investment contracts is calculated using a discounted cash flow model which considers recent fee bids as determined by recognized dealers, discount rate, duration of the underlying portfolio securities and the credit-worthiness of the issuer. There are no imposed redeemable restrictions nor does the Plan have any contractual obligations to further invest in this fund. The JP Morgan Stable Asset Income Fund is included in Level 2.

The BlackRock S&P 500 Equity Index Fund-I is valued using a combination of quoted prices from active markets and prices from inactive markets. The BlackRock S&P 500 Equity Index Fund-I is included in Level 2.

**ARCH CHEMICALS, INC. CONTRIBUTING
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Notes to Financial Statements

December 31, 2010 and 2009

The Plan asset allocation at December 31, 2010 and 2009 was:

	2010	2009
Asset category:		
Equity	71%	71%
Fixed income	29	29
Total	100%	100%

The JP Morgan Stable Asset Income Fund, PIMCO Total Return Fund and PIMCO Real Return Fund are all fixed income funds. Additionally, a portion of the Arch Pre-mixed Portfolio (Conservative) investment option and the Arch Pre-mixed Portfolio (Moderate) investment option consist of fixed income investments. All other funds principally consist of equity investments.

The following table displays, by level, the fair values of each of the Plan's investments that are measured at fair value and that are subject to the disclosure requirements of ASC 820 at December 31, 2010:

	Level 1	Level 2	Level 3	Total
Mutual funds	\$ 104,681,057	—	—	104,681,057
Common/collective trusts	—	63,490,176	—	63,490,176
Common stock	48,233,731	—	—	48,233,731
Total investments, at fair value	\$ 152,914,788	63,490,176	—	216,404,964

The following table displays, by level, the fair values of each of the Plan's investments that are measured at fair value and that are subject to the disclosure requirements of ASC 820 at December 31, 2009:

	Level 1	Level 2	Level 3	Total
Mutual funds	\$ 93,328,924	—	—	93,328,924
Common/collective trusts	—	56,027,644	—	56,027,644
Common stock	41,041,660	—	—	41,041,660
Total investments, at fair value	\$ 134,370,584	56,027,644	—	190,398,228

(10) Risks and Uncertainties

The Plan invests in various investment securities. Investment securities are exposed to various risks such as interest rate, market, and credit risks. Due to the level of risk associated with certain investment securities, changes in the values of investment securities could materially affect amounts reported in the statement of net assets available for Plan benefits.

**ARCH CHEMICALS, INC. CONTRIBUTING
EMPLOYEE OWNERSHIP PLAN**

Schedule H, Line 4i – Schedule of Assets (Held at End of Year)

December 31, 2010

Identity of issuer, borrower, lessor, or similar party	Description of investment including maturity date, rate of interest, collateral, par, or maturity value	Historical cost	Current value
PIMCO	Total Return Fund	**	\$ 29,685,199
PIMCO	Real Return Fund	**	5,357,660
Wells Fargo	Advantage Small Cap Growth Fund	**	6,717,691
T. Rowe Price	Equity Income Fund	**	8,240,663
Perkins	Mid Cap Value Fund	**	9,332,661
Turner	Mid Cap Growth Fund	**	3,473,488
Target	Small Capitalization Value Fund	**	4,656,828
Harbor	International Fund	**	11,084,669
American Funds	Growth Fund of America	**	10,401,562
American Funds	EuroPacific Growth Fund	**	13,733,418
BlackRock	S&P 500 Equity Index Fund-I	**	35,979,525
* JPMorgan	Stable Asset Income Fund	**	27,510,651
* Arch Chemicals, Inc. Fund	Arch Chemicals, Inc. Common Stock, Par value \$1.00	\$ 29,852,615	42,140,528
Olin Corporation Fund	Olin Corporation Common Stock, Par value \$1.00	**	3,839,003
* Participant-directed brokerage account	Various mutual funds/common stock investments	**	4,251,418
* Notes receivable from participants	Participant loans (1,202 outstanding loans with interest rates ranging from 3.25% – 9.50%, and maturity dates ranging from 2011 to 2025)	**	5,113,988
	Total		<u>\$ 221,518,952</u>

* Party-in-interest to the Plan.

** Historical cost omitted as these investments are participant-directed

See accompanying Report of Independent Registered Public Accounting Firm.


SIGNATURES

The Plan. Pursuant to the requirements of the Securities Exchange Act of 1934, the trustees (or other persons who administer the employee benefit plan) have duly caused this annual report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: June ___, 2011

ARCH CHEMICALS, INC. CONTRIBUTING
EMPLOYEE OWNERSHIP PLAN

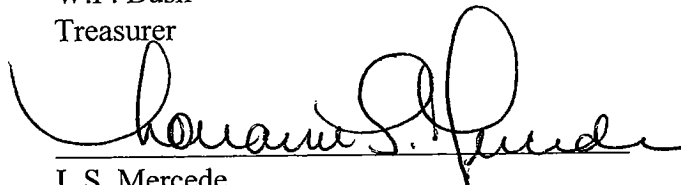
By: Members of the Arch CEOP
Administrative Committee



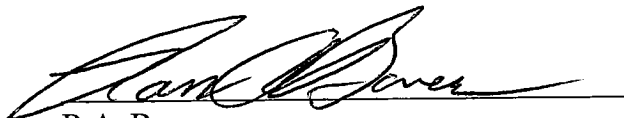
W.A. Sandonato
Vice President, Human Resources



W.P. Bush
Treasurer



L.S. Mercede
Director of Compensation and Benefits



R.A. Barnes
Director, Human Resources and
Corporate Security Officer

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
23	Consent of Independent Registered Public Accounting Firm

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Arch Chemicals, Inc.:

We consent to the incorporation by reference in the Registration Statements (333-133815, 333-54098 and 333-170457) on Form S-8 of Arch Chemicals, Inc. of our report dated June 22, 2011 with respect to the statements of net assets available for plan benefits of the Arch Chemicals, Inc. Contributing Employee Ownership Plan as of December 31, 2010 and 2009, the related statements of changes in net assets available for plan benefits for the years then ended, and the supplemental schedule of schedule H, Line 4i – Schedule of Assets (Held at End of Year) as of December 31, 2010 which report appears in the December 31, 2010 annual report on Form 11-K of the Arch Chemicals, Inc. Contributing Employee Ownership Plan.

KPMG LLP

Stamford, CT
June 22, 2011