
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 11-K

**ANNUAL REPORT 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, 2006

OR

TRANSITION REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to _____

Commission file number 1-16091.

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

POLYONE RETIREMENT SAVINGS PLAN

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

**POLYONE CORPORATION
33587 WALKER ROAD
AVON LAKE, OHIO 44012**

REQUIRED INFORMATION

The following financial statements and supplemental schedules for the PolyOne Retirement Savings Plan, prepared in accordance with the financial reporting requirements of ERISA, are being filed herewith:

Audited Financial Statements and Supplemental Schedules, December 31, 2006 and 2005 and Year ended December 31, 2006 with Report of Independent Registered Public Accounting Firm

**Page
No.
(in this
Report)**

1

The following exhibit is being filed herewith:

23.1 Consent of Ernst & Young LLP

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 sign on its behalf by the undersigned hereunto duly authorized.

Date: June 29, 2007

POLYONE RETIREMENT SAVINGS PLAN

By: PolyOne Corporation Retirement Plan Committee

By: /s/ W. David Wilson

W. David Wilson

Senior Vice President and Chief Financial Officer
PolyOne Corporation

AUDITED FINANCIAL STATEMENTS AND
SUPPLEMENTAL SCHEDULE

PolyOne Retirement Savings Plan
December 31, 2006 and 2005 and Year Ended December 31, 2006
With Report of Independent Registered Public Accounting Firm

PolyOne Retirement Savings Plan
Audited Financial Statements and Supplemental Schedule
December 31, 2006 and 2005 and
Year Ended December 31, 2006

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Report of Independent Registered Public Accounting Firm

The PolyOne Corporation
Retirement Plan Committee

We have audited the accompanying statements of net assets available for benefits of the PolyOne Retirement Savings Plan as of December 31, 2006 and 2005, and the related statement of changes in net assets available for benefits for the year ended December 31, 2006. 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. We were not engaged to perform an audit of the Plan's internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and 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 benefits of the Plan at December 31, 2006 and 2005, and the changes in its net assets available for benefits for the year ended December 31, 2006, in conformity with accounting principles generally accepted in the United States.

As discussed in Note 2 to the financial statements, in 2006 the Plan adopted FSP AAG INV-1 and SOP 94-1-1, *Reporting of Fully Benefit-Responsive Investment Contracts Held by Certain Investment Companies Subject to the AICPA Investment Company Guide and Defined-Contribution Health and Welfare and Pension Plans*.

Our audits were performed for the purpose of forming an opinion on the financial statements taken as a whole. The accompanying supplemental schedule of assets (held at end of year) as of December 31, 2006, is presented for purposes of additional analysis and is not a required part of the 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 of 1974. This supplemental schedule is the responsibility of the Plan's management. The supplemental schedule has been subjected to the auditing procedures applied in our audits of the financial statements and, in our opinion, is fairly stated in all material respects in relation to the financial statements taken as a whole.

/s/ Ernst & Young LLP

June 28, 2007
Cleveland, Ohio

PolyOne Retirement Savings Plan
Statements of Net Assets Available for Benefits

	2006	December 31,	2005
Assets			
Investments, at fair value	\$311,627,889		\$308,790,028
Receivables:			
Participant Contributions	313,327		322,628
Employer Contributions	338,865		331,076
Participant Loans	137,163		139,792
Total Receivables	789,355		793,496
Net assets available for benefits, at fair value	\$312,417,244		\$309,583,524
Adjustments from fair value to contract value for fully benefit responsive investment contracts	1,569,346		2,178,025
Net assets available for benefits	\$313,986,590		\$311,761,549

PolyOne Retirement Savings Plan

Statement of Changes in Net Assets Available for Benefits

Additions	
Investment Income:	
Interest & brokerage income	8,465,169
Dividends	4,383,905
Net appreciation in fair value of investments	<u>24,067,756</u>
	36,916,830
Transfers in from merged plans	2,281,356
Contributions:	
Participant	9,963,813
Employer	10,109,171
Rollover	789,118
Other	<u>231,796</u>
	21,093,898
Total Additions	<u>60,292,084</u>
Deductions	
Benefits paid directly to participants	32,736,674
Transfers out for sold business	24,954,457
Forfeitures	43,615
Administrative expenses	<u>332,297</u>
Total Deductions	<u>58,067,043</u>
Net Increase	2,225,041
Net Assets Available for Benefits	
Beginning of year	311,761,549
End of year	<u>313,986,590</u>

PolyOne Retirement Savings Plan

Notes to Financial Statements

December 31, 2006 and 2005 and
Year Ended December 31, 2006

1. Summary Description of the Plan

General

The PolyOne Retirement Savings Plan (the "Plan") is a defined contribution plan that covers all employees of the Company, other than leased employees, nonresident aliens, other employees regularly employed outside of the United States, and persons classified by the Company as anything other than employees (even if that classification is later changed). The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974, as amended ("ERISA").

The following summary description of the Plan is provided for general information purposes only. Participants should refer to the plan document for a more complete description of the Plan's provisions.

The Plan is sponsored by PolyOne Corporation (the Company and Plan Sponsor) and is administered by the PolyOne Corporation Retirement Plan Committee

The Company sold the assets of its Engineered Films business unit, effective December 31, 2005. As a result of the sale, all account balances for employees in the Engineered Films ("O'Sullivan") business have been transferred out of the Plan. The assets were transferred from the Plan's trust within 120 days of the sale with most participant's funds being transferred on January 31, 2006.

Effective August 15, 2006, and November 1, 2006 as approved by the Compensation and Governance Committee on June 29, 2006 and September 29, 2006, respectively the Dennis Chemical Company, Inc. 401(k) Plan and the Wilflex Savings Plan were merged with and into the Plan.

PolyOne Retirement Savings Plan
Notes to Financial Statements (continued)

1. Summary Description of the Plan (continued)

Contributions

Employee

A participant who is not a highly compensated employee may elect a bi-weekly payroll deduction from 1% to 50% of eligible earnings while participants who are classified as highly compensated employees may elect a bi-weekly payroll deduction of 1% to 15% of eligible earnings. The Retirement Plan Committee has the authority at its discretion to reduce the employees' bi-weekly contribution percentage in order to maintain the tax-qualified status of the Plan.

The Plan offers participants the choice of two savings options: an after-tax savings option and a pretax savings option. Participants may elect to participate in either or both of the savings options. Under both savings options, participants may direct that contributions be invested in any eligible funds offered by the Plan. Participants may change their investment options daily.

Employer

The Company provides for a matching contribution equal to 100% of the first 3% and 50% of the next 3% of the participant's eligible compensation. For each payroll period, the Company intends to make a retirement contribution for each participant equal to 2% of eligible earnings. Both the employer matching contributions and the 2% retirement contributions follow the participant's investment elections. In addition the Company will make additional contributions to certain eligible participants, as defined, equal to 1% to 4% of eligible compensation.

The Plan provides for the acceptance of rollover contributions from other plans qualified under the Internal Revenue Code (the Code). Rollover contributions can be made only in cash to the Plan's tax-deferred savings option.

Forfeiture accounts in the Plan total approximately \$173,557 at December 31, 2006, and are held in the NYL Insurance Anchor Account I – Stable Value Fund. The balance in these accounts will be used to fund future Company contributions and Plan administrative expenses.

PolyOne Retirement Savings Plan
Notes to Financial Statements (continued)

1. Summary Description of the Plan (continued)

Vesting

Participant contributions and Company matching and discretionary contributions are fully vested immediately. Company retirement contributions are 100% vested after three years of service. Individuals who were participants in the M.A. Hanna Company 401(k) and Retirement Plan or the M.A. Hanna Capital Accumulation Plan as of May 31, 2003 were 20% vested after one year of service, 40% vested after two years of service, and as of May 31, 2006 these participants are fully vested.

Participant Loans

Participants may borrow a maximum amount equal to the lesser of 50% of their vested account balance (excluding amounts relating to discretionary profit sharing contributions) or \$50,000, subject to certain Department of Labor and Internal Revenue Service requirements. The Plan provides that loan amounts must be a minimum of \$1,000. Interest is charged to the borrower at the trustee's prime rate plus 1%. Payments on loans are made through payroll deductions and must be repaid within five years (personal loans) or five to fifteen years (primary residence loans).

Plan Withdrawals and Distributions

Active participants may make hardship withdrawals from their salary deferral and rollover account. Age-based in-service withdrawals are available from the participant's vested account balance.

Plan distributions are made to participants or their designated beneficiary upon normal retirement, disability, or death, in the full amounts credited to their participant account. A participant who leaves employment of the Company before normal retirement for reasons other than disability, death, or a reduction in workforce is eligible to receive all amounts credited to their account relating to participant contributions, including rollovers, and the vested portion of Company matching and discretionary contributions. Distributions are made in either a single lump sum or periodic payments. Additionally, employees of select merged plans may elect a portion in a lump sum with the remainder paid in periodic payments, a single life annuity for single participants, or a joint and 50% or 100% survivor annuity with the participant's spouse as the joint annuitant for married participants if these options were available under their previous plan.

PolyOne Retirement Savings Plan
Notes to Financial Statements (continued)

1. Summary Description of the Plan (continued)

Plan Termination

Although the Company has not expressed any intent to do so, the Company has the right under the Plan to discontinue its contributions at any time and to terminate the Plan subject to the provisions of ERISA. Upon either of these events, the accounts of each affected employee will vest immediately, and participants will receive a distribution of their total participant account balance.

Administrative Expenses

Administrative expenses of the Plan are generally paid through the forfeiture account. Participants are charged investment management fees, which are allocated to participant accounts.

2. Summary of Significant Accounting Policies

Basis of Accounting

The financial statements of the Plan are prepared using the accrual basis of accounting.

Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

New Accounting Pronouncement

In December 2005, the Financial Accounting Standards Board (FASB) issued FASB Staff Position AAG INV-1 and SOP 94-4-1, *Reporting of Fully Benefit-Responsive Investment Contracts Held by Certain Investment Companies Subject to the AICPA Investment Company Guide and Defined-Contribution Health and Welfare and Pension Plans* (the FSP). The FSP defines the circumstances in which an investment contract is considered fully benefit responsive and provides certain reporting and disclosure requirements for fully benefit responsive investment contracts in defined contribution health and welfare and pension plans.

PolyOne Retirement Savings Plan
Notes to Financial Statements (continued)

2. Summary of Significant Accounting Policies (continued)

New Accounting Pronouncement (continued)

The financial statement presentation and disclosure provisions of the FSP are effective for financial statements issued for annual periods ending after December 15, 2006 and are required to be applied retroactively to all prior periods presented for comparative purposes. The Plan has adopted the provisions of the FSP at December 31, 2006.

As required by the FSP, investments in the accompanying Statements of Net Assets Available for Benefits include fully benefit responsive investment contracts recognized at fair value. AICPA Statement of Position 94-4-1, *Reporting of Investment Contracts Held by Health and Welfare Benefit Plans and Defined Contribution Pension Plans*, as amended, requires fully benefit responsive investment contracts to be reported at fair value in the Plan's Statement of Net Assets Available for Benefits with a corresponding adjustment to reflect these investments at contract value. The requirements of the FSP have been applied retroactively to the Statement of Net Assets Available for Benefits as of December 31, 2005 presented for comparative purposes. Adoption of the FSP had no effect on the Statement of Changes in Net Assets Available for Benefits for any period presented.

Valuation of Investments and Income Recognition

Investments are stated at fair value. Securities traded on a national securities exchange are valued at the last reported sales price on the last business day of the Plan year. Investments for which no sale was reported on that date are valued at the average of the last reported bid and ask prices. Shares of mutual funds are valued at quoted market prices, which represent the net asset values of shares held by the Plan at year-end. Common/collective trust funds are stated at fair value, as determined by the trustee.

The New York Life Insurance Anchor Account I ("NYL Anchor") comprises 99.8% of the PolyOne Stable Value Fund. The NYL Anchor is a pooled separate account made available to participating plans through a group annuity contract offered to the plans' trustee. The group annuity contract is an investment contract that is fully benefit-responsive. The investment contract is recorded at contract value (i.e. book value), which represent contributions and reinvested income, less any withdrawals plus accrued interest. Participants may ordinarily direct the withdrawal or transfer of all or a portion of their investment at contract value. However, withdrawals influenced by Company-initiated events, such as in connection with the sale of a business, may result in a distribution at other than contract value.

PolyOne Retirement Savings Plan
Notes to Financial Statements (continued)

Valuation of Investments and Income Recognition (continued)

The contract value of the investment contract at December 31, 2006 and 2005, was \$52,662,621 and \$59,025,070, respectively. There are no reserves against contract values for credit risk of contract issuer or otherwise.

The fair value of the investment contract at December 31, 2006 and 2005, was \$51,093,275 and \$56,847,045, respectively. The net average yield was approximately 4.18% and 4.06% in 2006 and 2005. The crediting interest rate for these investment contracts is reset daily by the issuer but cannot be less than zero and was approximately 4.94% and 4.43% at December 31, 2006 and 2005, respectively.

Participant loans are valued at their outstanding balances, which approximate fair value. Purchases and sales of securities are reported on a trade date basis. Dividend income is recorded on the ex-dividend date and interest income is recorded on the accrual basis. Gains and losses on security transactions are determined using the average cost method.

3. Investments

The fair value of individual investments that represent 5% or more of the Plan's net assets are as follows:

	December 31,	
	2006	2005
PolyOne Corporation Common Stock	\$39,858,352	\$41,383,396
NYL Insurance Anchor Account I	51,093,275	56,847,045
Pimco Total Return Bond Fund	17,365,033	18,309,261
Franklin Balance Short-term Investment Fund	15,925,199	12,863,364
Mainstay S & P 500 Index Fund	51,819,974	54,365,163
Growth Fund of America	33,001,945	32,506,543
Alliance Bernstein Balanced Shares	20,878,324	21,197,146
Euro Pacific Growth Fund	23,536,603	16,465,706

PolyOne Retirement Savings Plan
Notes to Financial Statements (continued)

3. Investments (continued)

During 2006, the Plan's investments (including gains and losses on investments bought and sold, as well as held during the year) appreciated in fair value as follows:

	Net Realized and Unrealized Appreciation In Fair Value of Investments
PolyOne Common Stock	\$ 8,399,841
Mutual Funds	15,667,915
	<u>\$ 24,067,756</u>

4. 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, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and that such changes could materially affect participants' account balances and the amounts reported in the statements of net assets available for benefits.

5. Income Tax Status

The Plan has received a determination letter from the Internal Revenue Service dated March 10, 2004, stating that the Plan is qualified under Section 401(a) of the Code. As a result the related trust is exempt from taxation. Subsequent to this determination by the Internal Revenue Service, the Plan was amended. Once qualified, the Plan is required to operate in conformity with the Code to maintain its qualification. The Plan Sponsor believes the Plan is being operated in compliance with the applicable requirements of the Code, and therefore, believes that the Plan, as amended, is qualified and the related trust is tax exempt.

PolyOne Retirement Savings Plan
Notes to Financial Statements (continued)

6. Reconciliation of Financial Statements to the Form 5500

The following is a reconciliation of net assets available for benefits per the financial statements to the Form 5500:

	2006	December 31, 2005
Net assets available for benefits per the financial statements	\$313,986,590	\$311,761,549
Less :		
Deemed distributions	(180,160)	(184,927)
Receivables	(789,355)	(793,496)
Net assets available for benefits per the Form 5500	<u>\$313,017,075</u>	<u>\$310,783,126</u>

The accompanying financial statements are prepared using the accrual method of accounting. The Form 5500 is prepared using the cash basis of accounting. Therefore, Plan receivables represents a reconciling item.

Deemed distributions of participant loans are loans that are in default by participants of the Plan. While the U.S. Department of Labor does not recognize these loans as assets for regulatory reporting, they are included as assets (i.e., loans) in the financial statements of the Plan.

PolyOne Retirement Savings Plan
EIN: 34-1730488 Plan Number: 001
Schedule H, Line 4i—Schedule of Assets
(Held at End of Year)
December 31, 2006

Identity of Issue, Borrower, Lessor or Similar Party	Description of Investment	Current Value
	PolyOne Stock Fund –	
Mainstay Management	Mainstay Cash Reserves Fund I	1,359,615
PolyOne Corporation*	Common stock: 5,314,447 shares	39,858,352
	PolyOne Stable Value Fund	
New York Life Insurance*	Anchor Account I	51,093,275
Nationwide	3.39%2/15/2007	145,059
Pacific Investment Management Company AIM Advisors	PIMCO Total Return Fund: 1,672,932 units Small Cap Growth Fund: 226,171 units	17,365,033 6,610,991
Capital Research & Management	American Funds – Euro Pacific Growth Fund: 505,511 units	23,536,603
	American Funds – Growth Fund of America : 1,004,320 units	33,001,945
	American Funds – Washington Mutual Investors Fund: 353,382 units	12,315,355
Mainstay Management	Mainstay S&P 500 Index Fund: 1,585,193 units MainStay MAP Fund: 359,917 units	51,819,974 14,862,728
Franklin Advisory Services	Franklin Balance Sheet Investment Fund: 238,723 units	15,925,199
Alliance Capital Management	Alliance Bernstein Balanced Shares: 1,161,843 units	20,878,324
Brokerage Account	Various investments	13,795,838
Participant loans*	At interest rates ranging from 4.0 % to 10.5%	9,059,598
		<u>311,627,889</u>

* Indicates party-in-interest to the Plan.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference of our report dated June 28, 2007, with respect to the financial statements and schedule of the PolyOne Retirement Savings Plan included in this Annual Report (Form 11-K) for the year ended December 31, 2006 in the following registration statements:

Registration Number	Description
333-47796	Post Effective Amendment No. 3 on Form S-8 to Form S-4 pertaining to the Geon Company 1993 Stock Incentive Plan, the Geon Company 1995 Stock Incentive Plan, the Geon Company 1998 Interim Stock Award Plan, the Geon Company 1999 Incentive Stock Plan, the PolyOne Corporation Deferred Compensation Plan for Non-Employee Directors and the M.A. Hanna Company Long-Term Incentive Plan
333-141029	Form S-8 Registration Statement pertaining to the PolyOne Retirement Savings Plan and the DH Compounding Company Savings and Retirement Plan and Trust

/s/ ERNST & YOUNG LLP

Cleveland, Ohio

June 29, 2007