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**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, 2004

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:

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

Audited Financial Statements and Supplemental Schedules, December 31, 2004 and 2003 and Year ended December 31, 2004 with Report of Independent Registered Public Accounting Firm

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The following exhibits are being filed herewith:

23.1 Consent of Ernst & Young LLP

32.1 Certificate Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes Oxley Act of 2002, as signed by Thomas A. Waltermire, President and Chief Executive Officer

32.2 Certificate Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes Oxley Act of 2002, as signed by W. David Wilson, Vice President and Chief Financial Officer

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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, 2005

POLYONE RETIREMENT SAVINGS PLAN

By: PolyOne Corporation Committee for Employee  
Benefits Administration

By: /s/ Michael J. Meier

Michael J. Meier  
Corporate Controller  
PolyOne Corporation

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AUDITED FINANCIAL STATEMENTS AND  
SUPPLEMENTAL SCHEDULE  
PolyOne Retirement Savings Plan  
December 31, 2004 and 2003, and Year Ended December 31, 2004  
With Report of Independent Registered Public Accounting Firm

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PolyOne Retirement Savings Plan  
Audited Financial Statements and Supplemental Schedule  
December 31, 2004 and 2003, and  
Year Ended December 31, 2004

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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, 2004 and 2003, and the related statement of changes in net assets available for benefits for the year ended December 31, 2004. 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 PolyOne Retirement Savings Plan at December 31, 2004 and 2003, and the changes in its net assets available for benefits for the year ended December 31, 2004, in conformity with U.S. generally accepted accounting principles.

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, 2004, 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

Cleveland, Ohio  
June 24, 2005

PolyOne Retirement Savings Plan  
Statements of Net Assets Available for Benefits

	December 31	
	2004	2003
<b>Assets</b>		
Investments, at fair value	<b>\$ 320,444,227</b>	\$ 314,015,651
Receivables:		
Participant contributions	—	30,469
Employer contributions	—	32,378
From merger of Synergistics Industries (NJ) 401(k) Savings Plan	—	1,498,205
Total receivables	—	1,561,052
Net assets available for benefits	<b>\$ 320,444,227</b>	<b>\$ 315,576,703</b>

*See accompanying notes.*

PolyOne Retirement Savings Plan  
Statement of Changes in Net Assets Available for Benefits  
Year Ended December 31, 2004

Additions	
Investment income:	
Dividends	\$ 3,053,447
Interest	4,165,863
Net appreciation in fair value of investments	32,524,179
	<u>39,743,489</u>
Transfers from:	
PolyOne Retirement Savings Plan — A	11,938,521
PolyOne Retirement Savings Plan for Collective Bargaining Employees	2,644,788
PolyOne Retirement Savings Plan for Collective Bargaining Employees — A	225,310
Plast-O-Meric Thrift and Savings Plan	5,762,325
	<u>20,570,944</u>
Contributions:	
Participant	11,931,055
Employer	9,580,467
Rollovers	448,452
Other	34,156
	<u>21,994,130</u>
Total additions	82,308,563
<b>Deductions</b>	
Benefits paid directly to participants	39,725,524
Transfers for separated employees	37,658,288
Administrative expenses	57,227
Total deductions	<u>77,441,039</u>
Net increase	4,867,524
Net assets available for benefits:	
Beginning of year	315,576,703
End of year	<u>\$ 320,444,227</u>

See accompanying notes.

PolyOne Retirement Savings Plan

Notes to Financial Statements

December 31, 2004 and 2003, and  
Year Ended December 31, 2004

**1. Summary Description of the Plan**

The following summary description of the PolyOne Retirement Savings Plan (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 administered by the PolyOne Corporation Retirement Plan Committee.

**General**

The Plan is sponsored by PolyOne Corporation (the Company and Plan Sponsor). The Company was formed by the consolidation of The Geon Company and M.A. Hanna Company on August 31, 2000.

The Plan is an amendment and restatement of the M.A. Hanna Company 401(k) and Retirement Plan (the Hanna 401(k) Plan) and a continuation of the M.A. Hanna Capital Accumulation Plan (the Hanna CAP) and the O'Sullivan Corporation Retirement Savings Plan (the O'Sullivan 401(k) Plan). Effective June 1, 2003, as approved by the Compensation and Governance Committee on January 27, 2003, the Hanna CAP and the O'Sullivan 401(k) Plan were merged with and into the Hanna 401(k) Plan and the Hanna 401(k) Plan was amended, restated and renamed the PolyOne Retirement Savings Plan.

Effective January 1, 2004, as approved by the Compensation and Governance Committee on November 5, 2003, the Synergistics Industries (NJ) 401(k) Savings Plan (the Synergistics 401(k) Plan) was merged with and into the Plan. As a result of the merger, New York Life Investment Management LLC replaced Charles Schwab Trust Company as trustee. On December 31, 2003, Charles Schwab Trust Company sold and transferred all of the assets of the Synergistics 401(k) Plan to New York Life Investment Management LLC. These assets were received by the Plan's trust on January 2, 2004. A receivable from the Synergistics 401(k) Plan was recorded by the Plan at December 31, 2003 to reflect the transfer of assets to be received from the prior trustee.



PolyOne Retirement Savings Plan

Notes to Financial Statements (continued)

**1. Summary Description of the Plan (continued)**

Also effective January 1, 2004, as approved by the Compensation and Governance Committee on January 27, 2003, the PolyOne Retirement Savings Plan — A (formerly the Geon Retirement Savings Plan) was merged with and into the Plan. On December 31, 2003, all of the assets from the PolyOne Retirement Savings Plan — A (formerly the Geon Retirement Savings Plan), with the exception of the Brokerage Account, were received by the Plan's trust. The Brokerage Account assets were received on January 6, 2004.

As approved by the Compensation and Governance Committee on July 22, 2004, all account balances for employees in the Elastomers and Performance Additives business that was sold August 5, 2004, were transferred out of the Plan. The assets were transferred from the Plan's trust on August 16, 2004.

Effective December 1, 2004, as approved by the Compensation and Governance Committee on October 6, 2004, the PolyOne Retirement Savings Plan for Collective Bargaining Employees, the PolyOne Retirement Savings Plan for Collective Bargaining Employees — A and the Plast-O-Meric Thrift and Savings Plan were merged with and into the Plan. The assets of the three plans were received by the Plan's trust on December 1, 2004.

The Plan is a defined contribution plan that covers all employees of the Company, other than leased employees, non-resident 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 (ERISA).

**Contributions**

Prior to January 2004, each employee who elected to participate in the Plan could authorize a bi-weekly payroll deduction from 1% to 15% of eligible earnings. Effective January 1, 2004, participants may elect to contribute 1% to 50% 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. Effective January 1, 2005, the employee contribution percentages were changed so that 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.

PolyOne Retirement Savings Plan

Notes to Financial Statements (continued)

**1. Summary Description of the Plan (continued)**

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.

Effective January 1, 2004 the Company provides for a matching contribution equal to 50% of the first 3% and 25% of the next 3% of the participant's eligible compensation. For each payroll period, the Company intends to make an additional 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, effective January 1, 2004, the Company will make additional contributions to certain eligible participants, as defined, equal to 1% to 4% of eligible compensation.

Effective April 1, 2005, the Company increased its matching contribution from 50% to 100% of the first 3% of the participant's eligible compensation. The Company match on the next 3% remains at 25%.

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.

**Vesting**

Participant contributions and Company matching and discretionary contributions are fully vested immediately. Company retirement contributions are vested after three years of service.

**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).

PolyOne Retirement Savings Plan  
Notes to Financial Statements (continued)

**1. Summary Description of the Plan (continued)**

**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 profit sharing 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.

**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 credited to participant accounts.

PolyOne Retirement Savings Plan  
Notes to Financial Statements (continued)

**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.

**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. 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.

PolyOne Retirement Savings Plan  
Notes to Financial Statements (continued)

### 3. Investments

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

	December 31	
	2004	2003
PolyOne Common Stock	<b>\$59,932,788</b>	\$54,138,598
NYL Insurance Anchor Account I — Stable Value Option	<b>59,786,394</b>	61,832,126
PIMCO Total Return Fund	<b>17,679,830</b>	17,911,550
Mainstay S&P 500 Index Fund	<b>58,106,429</b>	65,803,485
Growth Fund of America	<b>28,249,223</b>	32,901,477
Alliance Bernstein Balanced Shares	<b>21,605,407</b>	25,787,959

During 2004, 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:

Common stock	<b>\$18,845,988</b>
Mutual funds	<b>13,678,191</b>
	<b><u>\$32,524,179</u></b>

### 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.

PolyOne Retirement Savings Plan

Notes to Financial Statements (continued)

**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 Internal Revenue Code (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.

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PolyOne Retirement Savings Plan  
EIN #34-1730488 Plan #010  
Schedule H, Line 4i — Schedule of Assets  
(Held at End of Year)  
December 31, 2004

Identity of Issue, Borrower, Lessor, or Similar Party	Description of Investment	Current Value
	PolyOne Stock Fund -	
Mainstay Management	Mainstay Cash Reserves Fund I	\$ 2,042,791
PolyOne Corporation*	Common stock: 6,615,098 shares	59,932,788
New York Life Insurance*	Anchor Account I — Stable Value Option	59,786,394
Pacific Investment Management Company	PIMCO Total Return Fund	17,679,830
AIM Advisors	Small Cap Growth Fund	4,161,730
Capital Research & Management	American Funds — Euro Pacific Growth Fund	11,550,595
	American Funds — Growth Fund of America Fund	28,249,223
	American Funds — Washington Mutual Investors Fund	10,419,083
Mainstay Management	Mainstay S&P 500 Index Fund	58,106,429
	MainStay MAP Fund	12,948,735
Franklin Advisory Services	Franklin Balance Sheet Investment Fund	8,513,168
Alliance Capital Management	Alliance Bernstein Balanced Shares	21,605,407
Brokerage Account	Various investments	15,706,433
Participant loans*	At interest rates ranging from 4.0% to 10.5%	9,741,621
		<u>\$ 320,444,227</u>

\* Indicates party in interest to the Plan.

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form S-8 No. 333-47796) pertaining to the PolyOne Retirement Savings Plan of our report dated June 24, 2005, 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, 2004.

/s/ ERNST & YOUNG LLP

Cleveland, Ohio  
June 24, 2005



**CERTIFICATION PURSUANT TO  
18 U.S.C. SECTION 1350,  
AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 11-K of the PolyOne Retirement Savings Plan (the "Plan") for the period ended December 31, 2004, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Thomas A. Waltermire, President and Chief Executive Officer of PolyOne Corporation, do hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- (1) The Report fully complies with the requirements of section 13(a) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Plan.

/s/ Thomas A. Waltermire

Thomas A. Waltermire

President and Chief Executive Officer

June 29, 2005

A signed original of this written statement required by Section 906 has been provided to the Plan and will be retained by the Plan and furnished to the Securities and Exchange Commission or its staff upon request.

**CERTIFICATION PURSUANT TO  
18 U.S.C. SECTION 1350,  
AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 11-K of the PolyOne Retirement Savings Plan (the "Plan") for the period ended December 31, 2004, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, W. David Wilson, Vice President and Chief Financial Officer of PolyOne Corporation, do hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- (1) The Report fully complies with the requirements of section 13(a) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Plan.

/s/ W. David Wilson

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W. David Wilson

Vice President and Chief Financial Officer

June 29, 2005

A signed original of this written statement required by Section 906 has been provided to the Plan and will be retained by the Plan and furnished to the Securities and Exchange Commission or its staff upon request.