

FORM 11-K

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

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

For the fiscal year ended December 31, 2003

OR

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

For the transition period from _____ to

Commission file number 1-475

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

A. O. Smith Profit Sharing Retirement Plan

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

A. O. Smith Corporation
11270 West Park Place
Milwaukee, WI 53224

REQUIRED INFORMATION

1. Not Applicable.
2. Not Applicable.
3. Not Applicable.
4. The A. O. Smith Profit Sharing Retirement Plan (the "Plan") is subject to the requirements of the Employee Retirement Income Security Act of 1974 ("ERISA"). Attached hereto is a copy of the most recent financial statements and schedules of the Plan prepared in accordance with the financial reporting requirements of ERISA.

Exhibits

- 23.1 Consent of Independent Auditors
- 32 Certification

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INDEPENDENT AUDITORS' REPORT

Benefits Committee
A.O. Smith Profit Sharing Retirement Plan
Milwaukee, Wisconsin

We have audited the accompanying statements of net assets available for benefits of the A.O. Smith Profit Sharing Retirement Plan as of December 31, 2003 and 2002, and the related statements of changes in net assets available for 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 auditing standards generally accepted in the United States of America and 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 benefits of the Plan as of December 31, 2003 and 2002, and the changes in its net assets available for benefits for the years then ended in conformity with accounting principles generally accepted in the United States of America.

April 2, 2004
Milwaukee, Wisconsin

REILLY, PENNER & BENTON LLP

A. O. SMITH PROFIT SHARING RETIREMENT PLAN
Milwaukee, Wisconsin

Statements of Net Assets Available for Benefits
December 31, 2003 and 2002

	<u>2003</u>	<u>2002</u>
Assets:		
Investments in Master Trust:		
Investment options at fair value	\$222,242,579	\$184,984,747
Participant loans receivable	2,149,755	2,221,264
	<hr/>	<hr/>
Total investments	224,392,334	187,206,011
Receivables:		
Company contributions	2,518,118	2,504,973
Due from brokers for securities transactions	8,405	2,150
Accrued Interest	23,923	--
	<hr/>	<hr/>
Total receivables	2,550,446	2,507,123
	<hr/>	<hr/>
Net assets available for benefits	\$226,942,780	\$189,713,134
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The accompanying notes to the financial statement
are an integral part of this statement.

A. O. SMITH PROFIT SHARING RETIREMENT PLAN
Milwaukee, Wisconsin

Statements of Changes in Net Assets Available for Benefits
Years Ended December 31, 2003 and 2002

	2003	2002
	<hr/>	<hr/>
Increases:		
Net income (loss) from the Master Trust:		
Investments	\$ 35,241,740	\$ (15,753,393)
Interest income from participant loans	162,230	174,180
	<hr/>	<hr/>
Net income (loss)	35,403,970	(15,579,213)
Contributions:		
Company	2,508,134	2,492,418
Participants	6,229,627	5,416,220
Rollovers	171,684	181,356
	<hr/>	<hr/>
Total contributions	8,909,445	8,089,994
Total (decreases) increases	44,313,415	(7,489,219)
Decreases:		
Benefit and withdrawal payments	9,223,791	13,886,502
	<hr/>	<hr/>
Change in net assets before transfers	35,089,624	(21,375,721)
Transfers from other plans	2,140,022	4,510
	<hr/>	<hr/>
Change in net assets available for benefits	37,229,646	(21,371,211)
Net assets available for benefits:		
Beginning of year	189,713,134	211,084,345
	<hr/>	<hr/>
End of year	\$226,942,780	\$189,713,134
	<hr/>	<hr/>

The accompanying notes to the financial statement
are an integral part of this statement.

A. O. SMITH PROFIT SHARING RETIREMENT PLAN
Milwaukee, Wisconsin

Notes to Financial Statements
December 31, 2003 and 2002

1. Basis of Presentation and Significant Accounting Policies

General

The A.O. Smith Profit Sharing Retirement Plan was established in 1956 to cover salaried or commissioned employees of the A. O. Smith Corporation, its subsidiaries and affiliates. Employees are eligible to participate in the Plan if they are scheduled to complete 1,000 hours of service in a Plan year. Employees elect to participate by designating a portion of their salary to be contributed to an account maintained on behalf of the participant. Participants direct the investment of their contributions into various investment options offered by the Plan (see Note 2).

Participant Loans

Participants may borrow from their fund accounts a minimum of \$1,000 up to a maximum of \$50,000 or 50 percent of their account balance, whichever is less. The loans are secured by the balance in the participant's account and bear interest at rates which are commensurate with local prevailing rates as determined by the Plan's Trustee.

Investment Valuation

All of the Plan's assets are held in the A. O. Smith Profit Sharing Retirement Master Trust (Master Trust) (Note 2) which are recorded at fair value. The financial statements of the Master Trust are presented separately and are incorporated by reference to the financial statements of this Plan.

Contributions and Benefit and Withdrawal Payments

The Plan is a defined contribution plan to which participants may make contributions of not less than 1% or more than 25% of their compensation. The Plan provides for all participant contributions to be made with tax-deferred dollars under Section 401(k) of the Internal Revenue Code. These contributions are excluded from the participant's current wages for federal income tax purposes. The Internal Revenue Code has set a maximum of \$12,000 and \$11,000 for tax-deferred contributions that may be excluded for any individual participant in 2003 and 2002, respectively. The Internal Revenue Code also allows additional catch-up contributions for participants over age fifty. The maximum additional contribution allowed was \$2,000 and \$1,000 in 2003 and 2002, respectively. No federal income tax is paid on the tax-deferred contributions and growth thereon until the participant withdraws them from the Plan.

Contributions from participants are recorded when A. O. Smith Corporation (the Company) makes payroll deductions from Plan participants. Contributions from the Company are accrued in the period in which they become obligations of the Company in accordance with terms of the Plan.

For each \$1.00 of 401(k) Tax-Deferred contributions, up to 6% of a participant's salary, the Company guarantees a contribution of \$.35. Additional Company contributions in excess of \$.35 will be based on the Company's return on net worth. The additional Company matching contribution amount is \$.05 times the return on net worth between 5% and 10%, plus \$.10 times the return on net worth in excess of 10% up to a maximum of 18%. Therefore, the guaranteed and additional contributions can combine for a maximum Company contribution of \$1.40 of participant contributions up to 6% of salary.

Vesting

Participants of the Plan are 0% vested in employer contributions with less than two years of participation, 40% vested after two years, 60% after three years, 80% after four years and fully vested after five years of participation. Participants are always fully vested in their own contributions.

A. O. SMITH PROFIT SHARING RETIREMENT PLAN

Milwaukee, Wisconsin

Notes to Financial Statements

December 31, 2003 and 2002

(Continued)

1. Basis of Presentation and Significant Accounting Policies (Continued)

Administrative Expense

Administrative expenses are paid by the Plan and are included as part of the net income (loss) from investments.

Participant Account Provisions

A separate account is maintained for each participant. The separate account balances are adjusted periodically as follows:

- a. Semi-monthly for participant's contributions.
- b. Annually for Company contributions.
- c. Daily for a proportionate share of increases and decreases in the fair value of Plan assets.
- d. The accounts are periodically adjusted for forfeitures, which are reallocated to participants in the same manner as if they were a Company matching contribution for the Plan year. Forfeiture allocations for 2003 and 2002 amounted to \$3,676 and \$38,435, respectively.
- e. Daily for benefit and withdrawal payments which consist of the following:
 - i. Upon retirement, death, disability, or termination of employment resulting from permanent reduction of personnel, an employee may withdraw any amount or the entire account balance for any reason. At age 70 1/2, an account distribution election must be made.
 - ii. Upon termination of employment for other reasons, the balance in the separate account (reduced for non-vested Company contributions and growth thereon based on years of service) may be paid in a lump sum.
 - iii. An active participant age 59 1/2 or older may withdraw the balance in the separate account. The balance in the separate account is paid to the participant in a lump sum.
 - iv. A participant may withdraw all or any portion of the principal balance attributable to after-tax contributions and earnings and rollover contributions and earnings. All or any portion of the balance attributable to Company contributions and earnings may also be withdrawn if the participant has five full years of employment with the Company.
 - v. A participant may withdraw at any time any amount attributable to participant contributions and growth to purchase, prevent eviction from or foreclosure on, a principal residence or to pay certain expenses (namely post-secondary education and unreimbursed medical expenses). Withdrawals may not include earnings on 401(k) contributions posted to a participant's account after 1988.

vi. No lump sum cash distribution in excess of \$5,000 will be made without the consent of the participant.

f. Daily for investment allocation changes made by participants.

Participants should refer to the Plan document for a more complete description of the Plan's provisions.

A.O. SMITH PROFIT SHARING RETIREMENT PLAN

Milwaukee, Wisconsin

Notes to Financial Statements
December 31, 2003 and 2002
(Continued)

2. A. O. Smith Profit Sharing Retirement Master Trust

The Plan assets are held in the A. O. Smith Profit Sharing Retirement Master Trust at the Marshall and Ilsley Trust Company. The Plan offers nine investment vehicles in which participants may invest their account balances. Shares of mutual funds are valued at the net asset value of shares held at year end. Shares of common/collective trust funds are valued at the redemption price established by the Trustee at year end. Participant loans receivable are valued at cost which approximates fair value.

The amount of Master Trust assets, income and change in value which is allocated to the Plan is determined by the ratio of participant account balances in the Plan to the total participant account balances of all participating plans. The defined contribution plans participating in the Master Trust at December 31, 2003, are the A. O. Smith Profit Sharing Retirement Plan, the A. O. Smith Corporation Savings Plan and the A.O. Smith Retirement Savings Plan. At December 31, 2003, the Plan was allocated 86.720% and 86.852%, respectively, of the Master Trust assets.

Significant information related to the investments in the Master Trust as of and for the year ended December 31, 2003, is as follows:

	December 31, 2003 Balance	2003 Income (Loss)	2003 Change in Fair Value
a. Registered Investment Company Mutual Funds:			
American EuroPacific Growth Fund	\$ 5,638,542	\$ 1,276,474	\$ 1,907,422
First American Equity Income Fund	12,236,031	2,538,701	2,874,286
Fidelity Aggressive Equity Portfolio	66,874,028	18,249,653	19,174,470
Vanguard Institutional Index Trust Fund	18,148,315	3,867,231	5,736,307
American Balanced Fund	15,298,016	2,683,865	3,164,133
Evergreen Core Bond Fund	7,278,861	245,842	7,278,861
First American Bond Fund	--	37,607	(6,903,623)
Marshall Mid Cap Value Fund	11,605,122	2,748,172	4,321,531
Subtotal	137,078,915	31,647,545	37,553,387
b. Common/Collective Trusts:			
A.O. Smith Stock Fund	4,074,100	1,157,160	425,061
A.O. Smith Stable Asset Income Fund	113,837,562	4,999,712	5,328,201
Subtotal	117,911,662	6,156,872	5,753,262
c. Participant Loans Receivable	3,763,488	262,742	(82,558)
d. Cash	2	--	(16,261)
Total	\$ 258,754,067	\$ 38,067,159	\$ 43,207,830

A.O. SMITH PROFIT SHARING RETIREMENT PLAN
Milwaukee, Wisconsin

Notes to Financial Statements
December 31, 2003 and 2002
(Continued)

2. A. O. Smith Profit Sharing Retirement Master Trust (Continued)

Significant information related to the investments in the Master Trust as of and for the year ended December 31, 2002, is as follows:

	December 31, 2002 Balance	2002 Income (Loss)	2002 Change in Fair Value
	<hr/>	<hr/>	<hr/>
a. Registered Investment Company Mutual Funds:			
American EuroPacific Growth Fund	\$ 3,731,120	\$ (462,015)	\$ (1,314,976)
First American Growth and Income Fund	--	2,354,707	(14,445,928)
First American Equity Income Fund	9,361,745	(5,148,615)	9,361,745
Fidelity Aggressive Equity Portfolio	47,699,558	(13,047,153)	(19,077,193)
Vanguard Institutional Index Trust Fund	12,412,008	(4,044,497)	(7,065,202)
American Balanced Fund	12,133,883	(1,172,014)	(3,391,785)
First American Bond Fund	6,903,623	494,353	1,883,032
Marshall Mid Cap Value Fund	7,283,591	(1,278,029)	7,283,591
	<hr/>	<hr/>	<hr/>
Subtotal	99,525,528	(22,303,263)	(26,766,716)
b. Common/Collective Trusts:			
A.O. Smith Stock Fund	3,649,039	1,110,203	602,092
A.O. Smith Stable Asset Income Fund	108,509,361	5,346,794	5,356,309
	<hr/>	<hr/>	<hr/>
Subtotal	112,158,400	6,456,997	5,958,401
c. Participant Loans Receivable	3,846,046	279,838	(251,645)
d. Cash	16,263	--	(74,686)
	<hr/>	<hr/>	<hr/>
Total	\$ 215,546,237	\$ (15,566,428)	\$ (21,134,646)
	<hr/>	<hr/>	<hr/>

3. Investments

Investments held by the Plan, that represents 5% or more of the Plan's net assets are as follows:

	December 31,	
	2003	2002
	<hr/>	<hr/>
Fidelity Aggressive Equity Fund, 87,698.815 and 86,936.220 shares, respectively	\$ 65,186,529	\$ 46,655,192
First American Equity Income Fund, 886,006.766 And 856,690.395 shares, respectively	11,340,887	N/A
Vanguard Institutional Index Fund, 151,018.647 and 131,525.576 shares, respectively	15,370,678	10,581,233
A.O. Smith Stable Asset Income Fund, 4,760,600.751 and 4,861,098.529 shares, respectively	88,894,288	86,815,438
American Balanced Fund, 834,841.698 and 799,051.042 shares, respectively	14,434,413	11,522,316

A.O. SMITH PROFIT SHARING RETIREMENT PLAN
Milwaukee, Wisconsin

Notes to Financial Statements
December 31, 2003 and 2002
(Continued)

4. Income Tax Status

The Plan obtained its latest determination letter on October 21, 1999, in which the Internal Revenue Service stated the Plan as then designed, was in compliance with the applicable requirements of the Internal Revenue Code. The Plan administrator and the Plan's tax counsel believe that the Plan is currently designed and being operated in compliance with the applicable requirements of the Internal Revenue Code. Therefore, no provision for income taxes has been included in the Plan's financial statements.

5. Plan Termination

While the Company has not expressed any intent to terminate the Plan, it is free to do so at any time. In the event of termination, each participant automatically becomes vested to the extent of the balance in his separate account.

6. Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts in the financial statements. Actual results could differ from those estimates.

CONSENT OF REILLY, PENNER & BENTON LLP

We consent to the incorporation by reference in the Registration Statement (Form S-8 No. 333-05799) pertaining to the A. O. Smith Profit Sharing Retirement Plan (the Plan) of our report dated April 2, 2004, with respect to the financial statements and schedules of the Plan included in this Annual Report (Form 11-K) for the year ended December 31, 2003.

Milwaukee, Wisconsin
June 15, 2004

REILLY, PENNER & BENTON LLP

CERTIFICATION
PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002
WITH RESPECT TO THE ANNUAL REPORT ON FORM 11-K
FOR THE YEAR ENDED DECEMBER 31, 2003
PERTAINING TO THE
A. O. SMITH PROFIT SHARING RETIREMENT PLAN

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350, each of the undersigned certifies that to the best of our knowledge:

- (1) the Annual Report on Form 11-K pertaining to the A. O. Smith Profit Sharing Retirement Plan (the "Plan") for the year ended December 31, 2003 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d) of the Securities and Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respect, the financial condition and results of the Plan.

Dated: June 15, 2004

/s/ Daniel J. Velicer
Daniel J. Velicer
Manager, Group Insurance
and International Benefits

Dated: June 15, 2004

/s/ Duane R. Carlson
Duane R. Carlson
Manager, Pension and Savings Plan