



Plating-Room Controls For Pollution Abatement

*A guidebook of principles and practice for curbing losses of solutions
and metals that otherwise might find their way into water courses.*

Reference Data Publication compiled by

Metal-Finishing Industry Action Committee

**OHIO RIVER VALLEY
WATER SANITATION COMMISSION**

OHIO RIVER VALLEY WATER SANITATION COMMISSION

An interstate agency representing Illinois, Indiana, Kentucky, New York, Ohio,
Pennsylvania, Virginia and West Virginia

CLARENCE W. KLASSEN, *Chairman*
E. BLACKBURN MOORE, *Vice Chairman*
HENRY WARD, *Past Chairman*

F. H. WARING, *Secretary*
LEONARD A. WEAKLEY, *Counsel*
ROBERT K. HORTON, *Treasurer*

COMMISSION MEMBERS

ILLINOIS

CLARENCE W. KLASSEN
Chief Sanitary Engineer
ROLAND R. CROSS, M. D.
Director of Public Health
J. J. WOLTMANN
Consulting Engineer

OHIO

HUDSON BIERY
Terrace Park, Ohio
KENNETH M. LLOYD
Executive Secretary, Mahoning
Valley Industrial Council
JOHN D. PORTERFIELD, M. D.
Director of Health

WEST VIRGINIA

N. H. DYER, M. D.
State Health Commissioner
W. W. JENNINGS
West Virginia Water Commission
ROBERT F. ROCHELEAU
Executive Secretary-Engineer
West Virginia Water Commission

INDIANA

BLUCHER A. POOLE
Technical Secretary
Stream Pollution Control Board
L. E. BURNEY, M. D.
State Health Commissioner
JOSEPH L. QUINN, JR.
The Hulman Company

PENNSYLVANIA

E. A. HOLBROOK
Pittsburgh, Penn.
HERBERT P. SORG
Speaker of the
House of Representatives
RUSSELL E. TEAGUE, M. D.
Secretary of Health

VIRGINIA

E. BLACKBURN MOORE
Chairman, Water Control Board
T. BRADY SAUNDERS
Commissioner, Water Control Board
ROSS H. WALKER
Commissioner, Water Control Board

KENTUCKY

HENRY WARD
Commissioner of Conservation
BRUCE UNDERWOOD, M. D.
State Health Commissioner
EARL WALLACE
Division of Game and Fish

NEW YORK

MARTIN F. HILFINGER
President, Associated Industries
of New York State, Inc.
HERMAN E. HILLEBOE, M. D.
State Health Commissioner
CHARLES B. McCABE
Publisher, New York Mirror

UNITED STATES GOVERNMENT

O. LLOYD MEEHEAN
Fish & Wildlife Service
ROBERT G. WEST
Corps of Engineers
LEONARD A. SCHEELE, M. D.
Surgeon-General
Public Health Service

STAFF MEMBERS

EDWARD J. CLEARY, *Executive Director and Chief Engineer*
JOHN C. BUMSTEAD, *Assistant Director*
ROBERT K. HORTON, *Sanitary Engineer*
JOHN E. KINNEY, *Sanitary Engineer*
WILLIAM R. TAYLOR, *Chemical Engineer*
ELMER C. ROHMILLER, *Staff Assistant*
HAROLD W. STREETER, *Consultant*

HEADQUARTERS • 414 WALNUT ST. • CINCINNATI 2, OHIO

Plating-Room Controls For Pollution Abatement

Prepared by the

METAL-FINISHING INDUSTRY ACTION COMMITTEE

- | | |
|---|--|
| W. L. PINNER, Manager of Research
(Chairman of committee)
Houdaille-Hershey Corp. | WALTER MILLER, Asst. Secretary-Treasurer
Hamilton Manufacturing Corp. |
| W. J. NEILL, President
American Electroplaters' Society
Columbus Metal Products, Inc. | W. H. TOLLER, JR., Chemical Engineer
Houdaille-Hershey Corp. |
| G. A. LOGSDON, Plating Superintendent,
American Radiator & Standard
Sanitary Corp. (Louisville Works) | R. G. CHOLLAR, Director of Research
National Cash Register Co. |
| C. L. PRICHARD, Manager
Electrical Appliances Factory
Arvin Industries, Inc. | L. J. HIBBERT, Head
Finishes Laboratories
National Cash Register Co. |
| A. M. REED, Chemist
Electric Auto-Lite Co. | C. C. CUPPS, Asst. Chief Engineer
Newton Falls Division
Standard Steel Spring Co. |
| K. S. WATSON
Manufacturing Policy Division
General Electric Co. | H. W. McELHANEY, Head Foreman
Metal Finishing Division
Talon, Inc. |
| DAVID MILNE, Chemical Engineer
General Motors Corp. | HAROLD FARBER, Chief Chemist
Mansfield Works
Westinghouse Electric Corp. |
| H. S. KLINE, Industrial Hygiene Engineer,
Frigidaire Division
General Motors Corp. | J. E. KINNEY, Sanitary Engineer
Ohio River Valley
Water Sanitation Commission
(Committee Coordinator) |

of the

OHIO RIVER VALLEY WATER SANITATION COMMISSION

July, 1951

COPYRIGHT 1951
Ohio River Valley Water Sanitation Commission

Price 50 cents

By way of explanation

This manual should have special appeal for managers of metal-finishing plants. Among other things, it tells how to cut operating costs.

But that is incidental to the reason for its publication by the Ohio River Valley Water Sanitation Commission. From the Commission's viewpoint, the primary purpose of the booklet is to show how stream pollution can be curbed by reducing waste discharges.

It is a happy circumstance when pollution abatement and operating economics can be achieved from the same effort. Yet, that is exactly what can be accomplished if metal-plants practice the "good-housekeeping" principles set forth in this manual. Here has been compiled the experience of sixteen management representatives, who comprise the Metal-Finishing Industry Action Committee of the Ohio River Commission. Their names and their companies are listed on the inside cover page.

This committee under the leadership of Walter L. Pinner, manager of research, Houdaille-Hershey Corporation, is preparing several manuals for guidance of the metal-finishing industry in curbing stream pollution. The present manual is the first; another deals with defining the plant-waste problem in terms of analysis and flow measurement; and a third will evaluate methods for treating waste waters.

The thoroughness with which the committee is developing these manuals is exceeded only by their fitness for the task to which they addressed themselves. In printing and distributing this information, the Commission hopes that the nearly 2,000 metal-finishing establishments in the Ohio River Valley will use it to further stream clean-up measures and their own best interests.

Acknowledgment is made of the availability of a federal grant under Public Law 845, a portion of which was used to defray part of the cost of publishing this manual.

EDWARD J. CLEARY,
Executive Director
and Chief Engineer

Cincinnati, Ohio
June 30, 1951

Table of Contents

	Page
Roster of Metal-Finishing Industry Action Committee	1
By Way of Explanation.	2
Frontispiece	4
Plating-Room Controls for Pollution Abatement.	5
Good-Housekeeping Principles	6
Reduce Dragout Losses	
Work drainage	7
Save-rinse tanks.	7
Number of rinses.	7
Fig 1 -- Plating solution recovery system (Method 1).	8
Save rinse vs fresh water	9
Concentrate save rinse.	9
Drag-in	9
Drip boards	9
Fig 2 -- Plating solution recovery system (Method 2).	10
Fig 3 -- Plating solution recovery system (Method 3).	11
Fig 4 -- Typical spray header installation.	12
Rinse effectively	
Clean racks	13
Fog sprays.	13
Uniform racking	13
Rinse-tank design	13
Fig 5 -- How to reduce drag-in for wire processing.	14
Fig 6 -- Coating of racks leads to reduced dragout.	15
Fig 7 -- Metal nodules carry out plating solution	16
Prevent Leaks and Losses	
Find leaks.	17
Don't hide equipment.	17
Above-surface filling	17
Float valves.	17
To save baths	17
Adsorb; don't flush	17
Fig 8 -- Good and bad practice in plating-room piping	18
Salvage Solutions for Further Use; Don't Discard Them	
Why purify?	19
Purification procedures	19
Typical examples of baths	19
Sell or Exchange Baths that Cannot be Purified.	20

