AP42 Section: **6.7**

Title: **Comments and correspondence for January 1995 5th edition**

napim
NATIONAL ASSOCIATION OF PRINTING INK MANUFACTURERS, INC.
Heights Plaza: 777 Terrace Avenue • Hasbrouck Heights, New Jersey 07604
Phone: 201-288-9454 • Fax: 201-288-9453

April 21, 1992

Mr. Dennis Beauregard
Emission Factors and Methodologies Section (MD-14)
Emission Inventory Branch
Technical Support Division
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Re: Printing Ink Industry
AP-42 Update

Dear Mr. Beauregard:

This will follow-up our phone conversation of early February, 1992 concerning the proposed draft of the printing ink portion of AP-42.

As agreed, we have reviewed the draft of the printing ink section you submitted to Mr. Barker of the Flint Ink Corporation and have proposed a revised draft. You will note we consider the language in the current version to be erroneous and misleading. The varnish manufacture described in sections 5.14.1 and 5.14.2 as well as table 5.14-1 is definitely and explicitly not part of the printing ink industry (SIC 2893). While a very limited number of the major printing ink companies may produce some varnishes in the form described in these sections, such manufacture would be classified under SIC 2851. Since such manufacture is clearly not part of the printing ink industry, we strongly recommend that it be deleted from the printing ink section of AP-42.

We understand that you may also be seeking some data on actual solvent emission during the manufacture of printing ink. At this time we do not have any such data available to us, but it might be possible for NAPIM to generate some preliminary data at such time as you feel it is required. Meanwhile, we hope that the attached draft will clarify the section on printing ink in the revised AP-42 document and that you will find it to be of assistance.

Thank you for contacting NAPIM in this matter. We look forward to working with you in the future if we can be of any further assistance.

Sincerely,

James E. Renson
Coordinator, Environmental Affairs

JAS:sm

5.14 PRINTING INK

5.14.1 Process Description

There are four major classes of printing ink: letterpress and lithographic inks, commonly called paste inks; and flexographic and gravure inks, which are referred to as liquid or fluid inks. There are also miscellaneous types which include screen process and steel-die engraving. Inks for non-contact printing such as jet inks are not normally considered to be in the same industry as conventional printing inks. Printing inks vary considerably in physical appearance, composition, method of application and drying mechanism. Flexographic and gravure inks have many elements in common with paste inks, but differ in that they are a very low viscosity and the fact that they almost always dry by evaporation of volatile solvents or, in case of water based systems, by evaporation of volatile amines.

Printing ink is manufactured by the mechanical dispersion of colorant into a vehicle. The fluid portion, commonly identified as the vehicle or varnish portion, contains most of the special ingredients that will make up the dry film characteristics of the ink; the drying speed; drying mechanism, and the press performance properties. The majority of all printing inks are made by the batch process; only certain large-volume standardized inks, particularly news inks and some heatset web offset inks, employ continuous processes.

The selection of equipment in the manufacture of printing ink depends on the volume to be produced, the pigment hardness and/or form in which it is introduced, the presence or lack of volatile solvents, the body or viscosity of the finished product and the method of application of the ink.

While some ink companies may manufacture vehicle varnishes by the cooking of the resins and oils, such manufacturers are not part of the printing ink industry (SIC 2893). Such manufacture is, instead, classified in the paint and varnish manufacturing industry (SIC 2851).

5.14.2 Paste Inks

In the manufacture of paste inks, coloring matter - pigment - is introduced into the vehicle varnish by various means of dispersion. Other miscellaneous ingredients, such as waxes or other additives are also introduced. The pigments may be introduced in various forms generally either in the form of dry color or flushed form. Flushed pigments are dispersions of pigment in vehicle formed by flushing a pigment presscake into an appropriate vehicle varnish or oil.

5.14.3 Fluid Inks

Vehicles for solvent-based fluid inks generally consist of one or more resins dissolved in an appropriate solvent blend. Vehicles for water based ink systems are generally polymers which have been solubilized by raising the pH with volatile amines.

Although the principal colorants used in liquid inks are pigments, dyes are sometimes used when the application requires transparency. During manufacture, pigments are added to the vehicle by mechanical means to achieve desired particle size. Solvent is added to adjust viscosity. Small amounts of various additives are also added to enhance the properties of the ink. These might include waxes, plastercizers or other additives. Colorant may be used either in dry form or pre-dispersed in a suitable resin or solvent vehicle.

5.14.4 Emissions

Solvent type liquid inks and certain screen process inks utilize low-boiling solvents in their manufacture. Nevertheless, solvent emission during ink manufacture is exceedingly low and solvents are often captured by hoods placed over the mixing tubs. It is critical for the ink manufacturer to keep solvent emission to an absolute minimum. Solvent loss adds to the cost of manufacture and excessive loss can make the manufacturing process uneconomic. Although substantially lower, it is unlikely that solvent loss during the manufacture of printing ink would account for more than 3% total of production in any given manufacturing facility.

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James H. Sutphin, Executive Director

June 26, 1992

Mr. Dennis Beauregard
Emission Factors and Methodologies Section (MD-14)
Emission Inventory Branch
Technical Support Division
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

RE: Printing Ink Industry
AP-42 Update

Dear Mr. Beauregard:

It has recently come to our attention that some state clean air permitting authorities are using the outdated version of AP-42 as a basis for describing the characteristics of printing ink manufacturing facilities. Since the old version of AP-42 would give the permitting authority an erroneous impression that printing ink facilities were major emittors, some of our members have requested that we make the draft of the revised AP-42 which we submitted to you on April 21, 1992, available to the states.

Consequently, in the hope of clearing up any misunderstanding, we have sent the attached letter to the clean air permitting contact at each of the states.

Please note that it has been suggested that the last sentence in the proposed draft should be clarified to read, "……..3% of total production of solvent inks....." (change underlined). In the memorandum sent to the states we have also noted that where controls are used, emissions resulting from solvent loss will be significantly reduced depending on the capture efficiency of the controls.

Thank you for your interest.

Sincerely,

James H. Sutphin

James H. Sutphin
Executive Director

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napim Bulletin

NUMBER: 92-36

DATE: June 24, 1992

TO: Official Representatives - Members and TAMs

FROM: Conservation Committee

CLARIFICATION OF AP-42 SENT TO STATES

It has recently come to NAPIM's attention that many state clean air permitting authorities are using an outdated version of a federal EPA document describing the printing ink industry (AP-42) in reviewing permit applications and evaluating the need for permits. This document could give the state permitting authority a completely erroneous impression that printing ink facilities in their area were major emmitters of VOC's This might cause permitting authorities to question unnecessarily the potential VOC emissions of an ink facility, or cause difficulty in the event an ink plant were applying for a permit.

In an effort to clear up any such misunderstanding, NAPIM has sent a notification to each state clarifying the description of the printing ink industry in AP-42. A copy is attached.

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NOTE: Where controls are used, emissions resulting from solvent loss will be significantly reduced depending on the capture efficiency of the controls.

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James H. Sutphin, Executive Director

July 29, 1992

Mr. Dennis Beauregard
Emission Factors and Methodologies Section (MD-14)
Emission Inventory Branch
Technical Support Division
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Dear Mr. Beauregard:

Since my letter of June 16, 1992, we have distributed our proposed revision of AP-42 to the NAPIM Membership and have received several comments from industry technical people. As a result, we would like to submit an additional suggested change to the printing ink section (5.14) submitted to you on April 21, 1992.

We had assumed that it was evident that water based inks dry by evaporation of water in addition to evaporation of volatile amines. However, as a further clarification, it has been suggested that the last sentence in 5.14.1 be changed to read, "solvent based flexographic and gravure inks have many ingredients in common with paste inks. They differ in that they are very low in viscosity, contain volatile solvents and dry by solvent evaporation. In the case of waterbased flexographic and gravure systems, drying is achieved through the evaporation of water and small percentages of volatile amines."

We believe that this revised statement would clarify the true nature of water based systems and emphasize their impact in reducing VOCs.

Thank you for your consideration.

Sincerely,

James H. Sutphin

James H. Sutphin
Executive Director

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