National Asphalt Pavement Association

Focus on HMAT

HOT MIX ASPHALT TECHNOLOGY
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Tests Show Low Emissions

Tests Show Very Low Emissions Levels From Silos and Truck Load-Out

Thanks to a proactive response by NAPA and industry partners, concerns raised by citizen's groups about air emissions during truck load-out are being laid to rest. Data from tests conducted at HMA plants by the U.S. Environmental Protection Agency (EPA) in partnership with NAPA prove conclusively that truck load-out and silo emissions levels are very low. Emissions are dramatically less than estimates by citizen's groups, and far beneath the levels that would automatically trigger EPA regulation under the Clean Air Act of 1990 (see Figure 1).

In comments on EPA's draft test data report, NAPA President Mike Acott thanked EPA for providing the opportunity to prove that the Hot Mix Asphalt industry is not a "major source" of emissions. EPA is expected to release the final report on the truck load-out test program this winter. NAPA was among about 20 industry and citizen groups that filed comments on the draft report released in June 1999, which contained approximately 6,000 pages of test documentation.

"Clearly, when issues of public health and safety are raised, it is a serious matter and we take it as such," said Gary Fore, NAPA Vice President, Environment & Safety. "We must answer technical questions with scientific facts and data where we can, and be informed and responsive to the questions and concerns raised by the public."

NAPA began working on the truck load-out emissions issue in early 1996, when EPA requested assistance in responding to technical issues raised by citizen groups. NAPA agreed to partner with EPA in a test program to measure emissions during actual load-out operations.

EPA provided state-of-the-art emissions testing equipment that can capture, collect and measure emissions during load-out. The test method can search for up to 110 individual organic compounds and quantify total emissions. In order to produce the most accurate results, however, the tests needed to be conducted on an enclosed truck load-out facility. This would enable the use of standardized stack testing procedures to measure what would otherwise be uncontrolled, fugitive emissions from truck load-out. (The alternative would have been to construct a temporary enclosure at a significant cost to the test program.)

In 1996 and early 1997, NAPA's emissions task force visited and reviewed several potential test sites, and proposed a drum mix plant in Southern California where the load-out facilities are enclosed uniquely. The task force chose this plant because it met 15 of 16 U.S. EPA criteria for such testing, because the drum mix plant design is representative of most plants sold today, and because the majority of U.S. HMA is produced in drum mix plants. Choosing this test site allowed for the most accurate test possible. In

The unique design of the HMA facility made it an ideal site for the EPA to conduct the air emissions tests.

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addition, the site offered climate and operational advantages that would support sustained testing over a one-week time period.

In 1997, NAPA, through the efforts of Astec, Inc., performed preliminary testing to prove the feasibility and usefulness of the California facility for future testing. The data were shared with both EPA and citizen groups. Subsequently, it took about seven months for EPA and the citizen groups to agree on testing protocols. After refinements to the testing protocol, full-scale tests were conducted at the California facility in July 1998. Both Astec, Inc., and Hauck Manufacturing contributed crews for a full week's testing. Gail Mize, Executive Vice President, Astec Inc., and member of NAPA's Emissions Task Force, was on site the full week. Gary Fore represented NAPA, and a citizen group representative also was present. In addition, EPA contracted with the Research Triangle Institute, a credible scientific institution, to provide two independent scientists for an on-site audit of the entire testing process.

The California tests were conducted by crews under contract to the U.S. EPA. Approximately 25 people representing Pacific Environmental Sciences and Midwest Research Institute served on the testing crews. Temporary trailers were set up on site to house the necessary equipment, instrumentation, and computers.

When citizen groups later voiced concerns that batch plants may produce higher emissions than drum mix plants, the Massachusetts Asphalt Pavement Association assisted in locating a batch plant facility in Massachusetts for testing. It was important to test a facility in Massachusetts, since this would allow representatives of the concerned citizen groups to observe the test. To capture any uncontrolled load-out emissions at the Massachusetts site, a temporary total enclosure and exhaust system was built around the load-out chute. This temporary enclosure had to meet the same stringent design criteria as the California drum mix facility. In the end, the test data show that emissions from the batch plant were about the same as from the drum plant (Figure 1).

The extent and complexity of the overall

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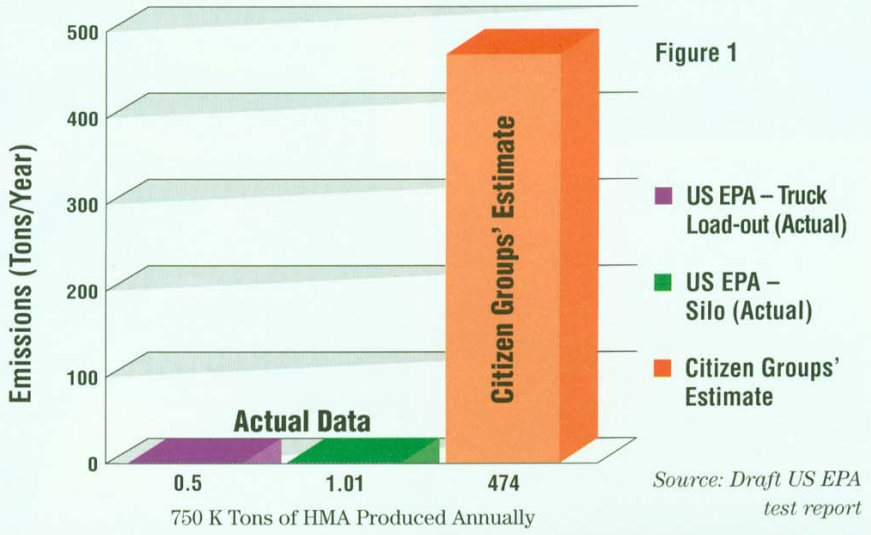

Figure 1

Source: Draft US EPA test report

The tests conducted at HMA plants in partnership with the U.S. Environmental Protection Agency (EPA) prove conclusively that truck load-out and silo emissions levels are very low. A group of concerned citizens published engineering estimates which projected that an HMA plant producing about 750,000 HMA tons per year would contribute approximately 474 tons of volatile organic compounds (VOCs) annually. The test results show the actual emissions at a 750,000 ton/year production rate are 0.5 tons for truck load-out and 1.01 tons for silos.

The average plant in the US produces only 140,000 tons per year, about 19 percent of the 750,000 ton-per year figure. It follows that the average HMA plant would emit less than 19 percent of the numbers shown above—a very small amount compared to Clean Air Act "Major Source" thresholds of 50-100 tons per year.

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In July, 1999, NAPA's Emissions Task Force met to discuss and evaluate the recently released draft test data. "We were extremely pleased with the test results because they proved what we knew all along—truck load-out operations are NOT a source of significant levels of emissions," said Paul Schulz, former NAPA Task Force Co-Chair. The Task Force prepared comments suggesting report improvements, which were forwarded to EPA in September prior to the close of the official comment period. EPA is expected to hold a meeting in December to review the comments received, after which the final report is to be released. The truck load-out and silo data then will be incorporated as part of EPA's national emissions factors guidance document.

"The culmination of this test effort represents a most significant accomplishment. Not only does it represent several years of blood, sweat, and tears on the part of NAPA Members and NAPA staff—the effort and the results continue to show that we are a responsible Industry," said Gordon Harner, Barrett Paving Materials, Inc., long-standing Chairman of NAPA's Environmental, Safety, and Plant Operations Committee (ESPOC).

The EPA utilized state-of-the-art equipment capable of searching for up to 110 organic compounds and quantifying total emissions.

What is a "major source?"

Title V of the Clean Air Act of 1990 (CAA) targets the regulation of "major sources" of air emissions.

If a source emits more than the threshold quantity, it is termed a "major source." The threshold quantity is spelled out in the Clean Air Act based on whether a source of air emissions is located in a region of the country that is in attainment with National Ambient Air Quality (NAAQ) standards for a specific pollutant, such as ozone. For example, in attainment areas where NAAQ standards for ozone are met consistently, the threshold for volatile organic compounds (VOCs) is 100 tons per year. In the Northeast Ozone Transport Region, most of which is in non-attainment status, the threshold is 50 tons of VOCs per year. The tests showed that an HMA plant producing 750,000 tons of Hot Mix Asphalt per year would emit 0.5 tons per year at truck load-out and 1.01 tons at the silos.

The primary objective of the truck load-out testing was to quantify the uncontrolled emissions of VOCs and to determine if the levels of truck load-out emissions were, in fact, potentially high enough to reach "major source" thresholds.

As Figure 1 shows, total emissions of VOCs during truck load-out are far below levels that would qualify HMA Plants as a "major source" subject to regulation under Title V of the Clean Air Act.

For more information on Clean Air Act issues related to Hot Mix Asphalt Plants, see NAPA's *Evaluation of Stack Emissions from HMA Facility Operations, Special Report 166*; and *Dealing with Title V Operating Permits: the 'Synthetic Minor' Alternative, Special Report 175*; available from the NAPA Publications Office at 888-468-6499.