

James Southerland
Component Leader, Emissions Inventory
U.S.EPA

“A proper emissions inventory is integral to the strategy development for the Volgograd triangle area.”

BACKGROUND

The goals of the emission inventory component of RAMP were to transfer US emission inventory technology and experience to Russian counterparts to support an improvement of current Russian emission factors and inventories. Additionally, this component of RAMP was designed to work with other RAMP components such as source testing, strategy development, and ambient monitoring. Emission inventory activities included development and implementation of an area and point source inventory in Volgograd, coordination of source testing programs in Volgograd and St. Petersburg, collection of data to generate emission factors from the source testing results, and preparation and submittal of emission estimates to the RAMP strategy development component to allow for modeling of the air basin in northern Volgograd.

ACCOMPLISHMENTS

Russian and American emission factors and inventory development practices were studied by the RAMP team in 1995. The results of this evaluation indicated significant differences between US methods and Russian methods. Recommendations were made to evaluate Russian methods in greater detail and to proceed with the full initiation of the Volgograd pilot inventory for point and area sources. Data from the February 1994 US EPA survey were compiled and used along with other information to determine which source categories were to be inventoried in Volgograd and which sources should be included in the task to improve Russian inventory guidance. US EPA guidance and software were provided to the Ministry, VESA, SRI-AAP and Institute Agroproject (IA) along with an English/Russian-Russian/English glossary of inventory terms in the spring of 1994. US EPA visited Volgograd in June 1995 to demonstrate to IA and VESA staff members how to calculate emissions based on the area source inventory plan and how to store the collected data in computer spreadsheets. The designated Volgograd area sources included waste water treatment facilities, chemical storage tanks, residential heating and on-road vehicles, among others. The Volgograd area source inventory was edited and was conducted in the summer of 1996.

POINT SOURCE ACTIVITIES

In March 1995, the US EPA, VESA, and Institute Agroproject defined a limited geographic region of Volgograd where the point source inventory would be concentrated. This region, termed the “Triangle”, was formed by the Red October Steel Mill, the silica brick materials plant, and the Volgograd aluminum plant and included the batch cement plants, furniture manufacturing, bakeries, large residential boilers, and dry cleaners. Emission estimates for the point source inventory were submitted in late 1996.

IMPACT

The US EPA, the Ministry, Volgograd Environmental Services Administration (VESA), Hydromet, and Institute Agroproject all collaborated on the emissions inventory component. This led to the development of a pilot point, area and mobile source inventory in Volgograd. The lessons learned from implementing the pilot study helped support improvements to the Russian national emissions inventory guidance. Source testing activities in Volgograd helped to validate control efficiencies and emission factors used in the emissions inventory. Ambient testing and associated laboratory support helped in assessing the contributions of individual facilities to the overall air quality in Volgograd. Subsequent to this RAMP activity, the Ministry and VESA developed an emissions factors document for bakeries — a direct “lesson learned” from RAMP.

“The upgrade of inventory factors, methodology and training will pay benefits to the Russian environment for many years.”

**Vitali Milyaev
Director, SRIAAP**

DOCUMENTATION

“Emission Estimating Method and Plan for Volgograd Pilot Area Sources, 2 February 1995.”

“Emissions Estimating Methods and Plans for Volgograd Pilot Area Sources - Final Inventory Results, 1996.”

“Emission Estimating Plan for Volgograd Pilot Point Sources, 15 July 1995.”

“Emission Estimating Methods and Plan for Volgograd Pilot Point Sources - Final Inventory Results, 1 Sept. 1996.”

“Report on the Appropriateness of US Area Source Guidance for Use in Russia, 26 July 1996.”

“Report on the Appropriateness of US Point Source Guidance for Use in Russia, 15 July 1996.”

“A Comparison of Russian and US Emission Estimates, 4 September 1996.”

“Test Results for Red October and Primary Aluminum Plant using Russian Testing Equipment, 3 September 1996.

“Saturation Monitoring Project Operation and Maintenance and Quality Assurance Manual, 30 September 1996.”

Principals Involved in Emissions Inventory

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Anthony Wayne
Component Leader, Emissions Testing
U.S.EPA

“...the demonstration and use of the visible emission technique was one of the most successful RAMP achievements, one that should have lasting results.”

BACKGROUND

The main goal of the stack emission testing effort was to provide a technical base for a Russian program of visible emissions inspections. Additionally, there was a joint US EPA/Russian assessment and comparison of testing methodologies used for emissions testing in the two countries. The testing also provided a quality check on emission factors used in the emission inventory component. In May 1994, an agreement between US EPA and the Volgograd Environmental Services Administration (VESA) defined the direction of a Volgograd and Russia-wide visible emission program and identified both technical and legal requirements for program implementation.

ACCOMPLISHMENTS

The program has resulted in the training of Russian inspectors, enterprise environmental personnel, and Ministry officials in visible emission observations. In May 1994, the first smoke school demonstration was performed in Volgograd at which thirteen Russians from industry and regulatory agencies were trained as future instructors on visible emissions inspection techniques. In January 1995, six additional Russians were trained to monitor visible emissions.

The stack testing effort has been coordinated with the visible emission program (see the section below on Inspections) to assess both the emissions from enterprises prior to control and to assist Russian interest in linking visible observations with mass emissions. The testing upgraded existing Russian methods and served as a bridge between Russian and US EPA methods so that qualitative and quantitative comparisons of results from the two methods could be attempted. This allowed for a more informal understanding of Russian data by the US and other international organizations and efforts. The testing introduction was initiated parallel to the visible emission effort. The testing has been tied to ambient monitoring and was a complementary component of the ambient summer study conducted in the summer of 1997.



CIP Mobile Laboratory

IMPACT

The highlight of this effort has been a visible emission program in which an entirely new non-health-based program of emission standards applied to sources and inspector evaluations was used routinely as a part of the Russian source permit program. The success of the program has been recognized and will continue to expand elsewhere in the Russian Federation.

“The utilization of Method 9 (visible opacity) procedures will significantly intensify the studies and the identification of air quality violations.”

**Oleg Kreitchi
Chief Engineer, VESA
Volgograd, Russia**

Highlights from the RAMP component of emissions testing are as follows:

- Established formal emission testing planning procedures and guidance.
- Coordinated and delivered methods, quality assurance manuals and specific equipment and training to VESA.
- Evaluated and assisted in establishing an initial and continuing program of emission measurement and monitoring training for other Russian ministries based upon Volgograd pilot city activity.
- Specific training and syllabi through the Commodities Import Program (CIP) and the US EPA’s Air Pollution Training Institute video and training manuals.
- Assisted and advised in evaluating and recommending laboratory upgrades for sampling analyses and data evaluations including (1) automated data acquisition system capabilities assessments, (2) mobile lab assessments, and (3) equipment safety and training assessments.
- Advised and assisted in establishing an initial and continuing program of inspector emission measurement and monitoring training.



Oleg Kreitchi, VESA, at the site commemorating the first certified Russian smoke school.

DOCUMENTATION

Kreitchi, Oleg and Anthony Wayne, "Establishing a Viable Visible Emissions Program - Volgograd," Volgograd Environmental Committee Inspectorate/US EPA/OAQPS, June 7, 1996.

Kreitchi, Oleg, Stanislav Markin and Anthony Wayne, "Volgograd Visible Emissions Implementation Plan - Volgograd," *Russian Ministry Report*, The Volgograd VE Experiment, VESA/Ministry/US EPA, January 1997.

Principals Involved in Source Testing/Visible Emissions

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