

DESC: PILOT-SCALE SYNTHESIS OF SPECIALITY CHEMICALS.  
GOVERNMENT REQUEST FOR INFORMATION – THIS IS NOT A REQUEST FOR PROPOSALS. This synopsis is for information and planning purposes only and is not to be construed as a commitment by the Government. This is not a solicitation announcement for proposals and no contract will be awarded from this announcement. Reimbursement will not be made for any costs associated with providing information in response to this announcement and any follow-up information requests.

The Naval Sea Systems Command, Indian Head Division is seeking sources that can provide 1 kg to 100 kg quantities of specialty chemicals to be used in Navy pilot-scale synthesis programs. All companies that can meet the specification are encouraged to provide a capability statement, company literature, brochures, or any other information that demonstrates that the specification can be met.

The published chemical synthesis pathways and purity specifications for these needed materials are known. The recommended synthesis pathways for two immediate candidates are given below:

#### 3,6-Bis(3,5-Dimethylpyrazol-1-yl)-1,2,4,5-Tetrazine (DMPT)

Guanidine hydrochloride is refluxed with hydrazine monohydrate in 1,4-dioxane for two hours. After the mixture is cooled to ambient temperature, the resulting triaminoguanidine hydrochloride (TAG-HCl) product is filtered, washed with 1,4-dioxane, and dried. The TAG-HCl is reacted with two equivalents of 2,4-pentanedione at 70°C. The product of this reaction, 3,6-Bis(3,5-dimethylpyrazol-1-yl)-1,2-dihydro-1,2,4,5-tetrazine (BDDT), is isolated by filtration after cooling to room temperature. The filter cake is washed with water and then dried. BDDT is then reacted with gaseous nitrogen dioxide (NO<sub>2</sub>) in N-methylpyrrolidone (NMP) at room temperature to form 3,6-Bis(3,5-dimethylpyrazol-1-yl)-1,2,4,5-tetrazine (DMPT). The reaction mixture is drowned with ice water and filtered. The filter cake is washed with water, and then dried.

#### Sodium Azotetrazolate Pentahydrate (NaZT)

Sodium azotetrazolate pentahydrate (NaZT) is prepared by dissolving 5-amino-1H-tetrazole monohydrate in sodium hydroxide solution. The solution is heated to 65-70°C, followed by the addition of potassium permanganate. The excess potassium permanganate is destroyed by slow addition of sodium sulfite, and the product is recovered by filtration. The filtrate is saved and cooled and additional product is collected in a second filtration. The resulting bright yellow crystals are stored water-wet.

Any technical questions can be directed to Dr. Randall J. Cramer, (301) 744-2578, [cramerrj@ih.navy.mil](mailto:cramerrj@ih.navy.mil) or Mr. Jerry Salan, (301) 744-6123, [salanjs@ih.navy.mil](mailto:salanjs@ih.navy.mil)

All other questions should be directed to Ms. Penny Kennedy, Contracting Officer at [kennedy@ih.navy.mil](mailto:kennedy@ih.navy.mil). Any capability statements, company literature, brochures or any other information should be sent to NAVSEA Indian Head, 101 Strauss Avenue, Building 1558, Attn: Penny Kennedy, Contracting Officer, Indian Head, Maryland 20640-5035.

Deadline for submission of information is within 30 days of this announcement.