Appendix S

Survey of Cost Estimates for the EDSTAC's Proposed Endocrine Disruptor Screening and Testing Assays

This Appendix contains a detailed summary of a Cost Estimate Survey for Endocrine Disruptor Screening and Testing Batteries conducted in May 1998 by Applied Pharmacology and Toxicology, Inc. (APT). The purpose of the survey was to project costs for conducting the screening and testing batteries recommended by the EDSTAC.

Based upon Chapter Five – Screening and Testing of the April 3, 1998 EDSTAC Draft Report, and Appendices J, K, L, and what was P (and is now Q), APT developed detailed protocols for thirteen screening assays and seven tests according to a standardized format. These protocols were sent to 18 toxicology laboratories competent to conduct the types of assays and tests recommended by the EDSTAC. Fourteen laboratories responded by providing cost estimates for one or more of the assays and tests. The results of this cost estimate survey were summarized in Tables 5.6 and 5.7 in Chapter Five of the final EDSTAC report. A complete copy of the cost estimate survey, including protocols for the thirteen screening assays and seven tests, is included in the EDSTAC docket.

All materials related to APT's cost estimate survey except the twenty detailed protocols are contained in this Appendix, including: an example of the cover letter that accompanied the survey; the cost estimate form; and the final report. The final report describes the survey design, summarizes the results in Tables 1 - 3, and provides the individual cost estimates in its own Appendices A and B.

APPLIED PHARMACOLOGY
AND TOXICOLOGY, INC.

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May 15, 1998

Survey Respondent
Participating Laboratory
Street Address
City, State ZIP CODE

RE: Survey of Cost Estimates for EDSTAC's Proposed Endocrine Disrupter Screening and Testing Assays

Dear Respondent:

Many thanks to you and to Participating Laboratory, Inc. for your willingness to participate in this survey. The purpose of this survey is to obtain preliminary cost estimates from reputable laboratories for conducting the subject assays under GLP and providing a sponsor with standard reports and summaries of the data. This survey is conducted by Applied Pharmacology and Toxicology, Inc. (APT), and should not be misconstrued as an official function of the Endocrine Disruptor Screening and Testing Advisory Committee.

Several laboratories have been contacted to provide cost estimates. It is APT's intent to publicly thank each laboratory that provides assistance and to list their names in a final report in order to reference that the estimates are from competent laboratories. In no way will any of the technical information collected be attributed to a specific laboratory. Information from the survey will be reported as a range (high and low) of prices and mean price for each assay and for each battery of assays. APT will not reveal the particular assays for which any individual laboratory provides an estimate, nor will ATP reveal the dollar estimates that are provided by an individual laboratory. APT will take all prudent and reasonable measures to ensure that the information from this survey cannot be used to compare laboratories according to capability or price.

The EDSTAC has devised a two-tiered approach to screening and testing for endocrine disruption. Included with this letter is a copy of Chapter 5, Screening and Testing, from the April 3 EDSTAC draft report, as well as Appendices J, K, L, and P, which contain references and EDSTAC's descriptions of the protocols for screens and tests. These may assist your staff if there are questions regarding the protocols that APT has written. The complete EDSTAC report is available on the internet at
http://www.epa.gov.opptintr/opptendo/whatsnew.htm.

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Specific Requests and Critical Information:

- Enclosed please find on APT letterhead draft protocols for 13 screening assays and 7 tests with enhancements to EPA guideline studies. APT has written these protocols based upon EDSTAC's April 3 draft report. APT's protocols were written for the purpose of obtaining cost estimates from contract and industrial laboratories and should not be misconstrued as recommendations of the EDSTAC.
- Also included is a Cost Estimate Form. Please use this form to provide cost estimates as a single dollar (U.S.) figure for each assay according to your best professional judgment of the price you would charge a sponsor.
- Please base your cost estimates on the protocols and enhancements to EPA Guideline studies provided on APT letterhead. Other materials and descriptions of assays provided from the EDSTAC report and references are purely for your information and should not take precedence over APT's protocols for the purpose of estimating costs.
- It is recognized that laboratories that specialize in one area of toxicological testing may not be able to provide knowledgeable estimates in other areas of toxicology. It is also recognized that many laboratories will not have conducted the specific assays listed herein, nor a variation of them, but will nonetheless be equipped to provide knowledgeable estimates for any assay that is within the general scope of capabilities of the laboratory. Please provide estimates for all assays that are within the general scope of capability of your laboratory and for which you may reasonably expect to offer services.
- Please note that range-finding studies are included as integral parts of each assay protocol, and are NOT considered as separate assays. In providing an estimate of cost for each assay, please include the cost of an appropriate, adequate range-finding study for the assay. You may assume that results of *in-vitro* binding assays will be available before *in vivo* assays are conducted.
- Detailed protocols for analytical procedures are not included in these protocols. Please provide separate estimates for analytical services that would be required for each assay assuming that the analytical procedure is specified by the sponsor. A separate line for estimating analytical costs is provided on the Cost Estimate Form.
- Please complete the Cost Estimate Form to the best of your ability and fax back to me at 904/462-1267 by May 25, 1998. I would also ask that you please return an original copy of your estimate to me by U.S. mail. A self-addressed stamped envelope is included for that purpose.

Your assistance in this endeavor is greatly appreciated. I trust that this effort will be informative and useful for all involved. I can be contacted at the telephone, fax, or email listed below should you have questions regarding this project.

Very truly yours,

Christopher J. Borgert, Ph.D.
President / Principal Scientist

Email: cjborgert@apt-pharmatox.com

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Cost Estimate Form

Assay / Test	Estimated Cost U.S. Dollars
Tier 1 Screening Assays	$
***In-Vitro* Assays**	$
1. T1S: Rat Estrogen Receptor Equilibrium Exchange Assay	$
Analytical Cost (Range)	$
2. T1S: Rat Androgen Receptor Equilibrium Exchange Assay	$
Analytical Cost (Range)	$
3. T1S: MVLN Estrogen Specific Transcription Assay	$
Analytical Cost (Range)	$
4. T1S: CV1 Transcriptional Activation of Androgen Receptor	$
Analytical Cost (Range)	$
5. T1S: Steroidogenesis Assay in Minced Testes	$
Analytical Cost (Range)	$
***In-Vivo* Assays**	$
6. T1S: Uterotrophic Assay in Ovariectomized Rats	$
Analytical Cost (Range)	$
7. T1S: The "Hershberger" Assay in Male Rats	$
Analytical Cost (Range)	$
8. T1S: Pubertal Assay in Female Rat	$
Analytical Cost (Range)	$
9. T1S: Fish Gonadal Recrudescence Assay	$
Analytical Cost (Range)	$
10. T1S: Frog Metamorphosis Assay	$
Analytical Cost (Range)	$

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Assay / Test	Estimated Cost U.S. Dollars
11. T1S: *In Vivo* Biossay in Female Crl:Cd Br Rats	$
Analytical Cost (Range)	$
12. *In Vivo* Bioassay in Adult Male Crl:Cd Br Rats	$
Analytical Cost (Range)	$
13 *In Vivo* Bioassay Immature Male Crl:Cd Br Rats	$
Analytical Cost (Range)	$
Tier 2 Tests	$
14. Two-Generation Reproductive Toxicity Study in Rats	$
Analytical Cost (Range)	$
15. T2T: Alternative Mammalian Reproduction Test	$
Analytical Cost (Range)	$
16. T2T: One-Generation Mammalian Reproduction Test	$
Analytical Cost (Range)	$
17. T2T: Avian Reproductive Toxicity Test	$
Analytical Cost (Range)	$
18. T2T: Fish Life Cycle Toxicity Test	$
Analytical Cost (Range)	$
19. T2T: Mysid Toxicity Test	$
Analytical Cost (Range)	$
20. T2T: Amphibian Reproductive / Developmental Toxicity Test	$
Analytical Cost (Range)	

Quantitative Cost Discount as % (if applicable) _____

Name of Laboratory_____

Name of Respondent_____

Signature of Respondent_____

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APPLIED PHARMACOLOGY AND TOXICOLOGY, INC.

Consulting & Research Services

I. INTRODUCTION

Applied Pharmacology and Toxicology, Inc. (APT) is pleased to release the results of its Cost Estimate Survey for Endocrine Disrupter Screening and Testing Batteries. The purpose of this survey is to project costs for conducting the screening and testing batteries recommended by the U.S.EPA's Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC). This survey was funded in part by Chemical Manufacturers Association and in part by in-kind contribution from APT.

This survey sought estimates from professional laboratories competent to conduct the assays recommended by EDSTAC. Nonetheless, both the protocols on which the estimates are based and the estimates themselves are preliminary in nature. Results of future validation and standardization programs and experience gained in running the batteries that are ultimately required by EPA will be important factors in determining the actual costs of conducting the screening and testing batteries.

Five industry toxicology laboratories and nine contract laboratories provided cost estimates for this survey. A list of the participating laboratories is provided in Table 1. Summaries of the cost information provided by these laboratories for Tier 1 Screening and Tier 2 Testing are listed in Tables 2 and 3 of this report, respectively. Individual cost estimates for each protocol, statistical analyses and graphic representations of the data for Tier 1 Screens are found in Appendix A and for Tier 2 Tests in Appendix B.

APT is sincerely grateful to the participating laboratories for their willingness to participate in this survey and for their hard work in generating professional cost estimates. Those who are informed by the results of this survey should appreciate the significant time and resources these participants devoted to generating cost estimates. Any shortcomings in the results of the survey are solely the responsibility of APT and should not be attributed to the participating laboratories or to CMA.

II. BACKGROUND

In its April 3, 1998 Draft Report, the EDSTAC recommends a two-tiered approach to screen and test chemical substances and mixtures in response to provisions of the Food Quality Protection Act and 1996 Amendments to the Safe Drinking Water Act. Thirteen assays comprise the Tier 1 Screening (T1S) assays, while seven more comprehensive and definitive toxicity tests comprise Tier 2 Testing (T2T). Chapter 5, Screening and Testing, of the EDSTAC Draft Report outlines the rationale for "recommended" and "alternative" assays and tests for this tiered approach. Appendix J of the EDSTAC Draft Report provides citations to the scientific literature to support these screening and testing recommendations. Appendix K provides an overview of assays and Appendix L provides details of the methods for conducting the individual Tier 1 Screening assays. Appendix P provides details for conducting the individual Tier 2 Tests.

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