Residential and Commercial Awareness and Use of Rodenticides in Southern California Urban Ecosystems

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A. SUPPORTING STATEMENT

1. IDENTIFICATION OF THE INFORMATION COLLECTION

1(a) TITLE

Residential and Commercial Awareness and Use of Rodenticides in Southern California Urban Ecosystems

1(b) ABSTRACT

This study will be conducted, and the information collected, by the Risk Characterization Branch, Western Ecology Division, National Health and Environmental Effects Research Laboratory (NHEERL), Office of Research and Development, U.S. Environmental Protection Agency (EPA). Participation in this collection of information is strictly voluntary.

This study will examine use of rodenticides by households and household services (e.g., restaurants), as a case study for developing methods for studying attitudes toward the environment and human decision-making related to potential impacts of household and household service activities on the sustainability of urban ecosystems. The specific topic of interest was spurred by evidence of recent inadvertent poisoning of wildlife in southern California (Riley et al., 2003, *Conservation Biology* 17:566-576; Seth Riley, National Park Service, personal communication; Brian Cypher, California State University, Stanislaus, personal communication). Although other researchers have sought pesticide use information in California, corresponding animal movement data are unavailable. Therefore, study areas for this research were based on availability of locally-corresponding animal movement data.

Household and household service use of rodenticides and awareness of rodenticide use will be assessed by an adult-completed questionnaire. The questionnaire will be distributed to a random selection of households and household service providers within the southwestern quadrant of Bakersfield, as well as portions of the cities of Thousand Oaks, Agoura Hills, Calabasas, and Westlake Village, California. General locations of survey distribution will correspond to known movement patterns of resident large mammal populations, as collected via radiotelemetry observation by local wildlife biologists (Riley et al., 2003, *Conservation Biology* 17:566-576; Seth Riley, National Park Service, personal communication; Brian Cypher, California State University, Stanislaus, personal communication).

The collected information will be used to assess overall household and household service use of rodenticides as a case study to demonstrate a method that can be used to link ecology with social science (via a social survey) and evaluate the spatial distribution of attitudes and actions as related to human decision-making, as well as awareness of effects of human activities on ecosystems. Integrating household and household service use of rodenticide data and responses related to awareness of impact on the sustainability of urban ecosystems will be used to assess the potential contribution that household rodenticides make to pesticide pollution. This will be inferred from wildlife observation and research plus assessment of the factors that contribute to environmental awareness of residents located on the urban-wildland fringe.

The estimated respondent burden for this study is 1,485 hours and $26,463. This study requires no maintenance of records by the respondents. The estimated agency cost for conducting this study is 1,980 hours and $44,442.

2. NEED FOR AND USE OF THE INFORMATION COLLECTION

2(a) NEED / AUTHORITY FOR THE INFORMATION COLLECTION

This information is part of a research program consistent with the EPA's strategic plan goal of healthy communities and ecosystems (Goal #4), as well as the EPA's sustainability initiative. EPA's Office of Research and Development (ORD) supports the agency mission as one goal of its own strategic plan. ORD draws its research framework from other EPA goals that include land preservation and restoration, healthy communities and ecosystems, and compliance and environmental stewardship. The EPA has broad legislative authority to establish pesticide use criteria and to conduct research to support these criteria. The objective of this data collection is to demonstrate a method that can be used to assess resident awareness of how human activities affect the environment as part of EPA's research program on pesticide use and effects on the environment (Federal Insecticide, Fungicide, and Rodenticide Act; 7 U.S.C. §136 et seq. (1996)). By directly asking residents a series of questions about rodenticide use and potential for effects on local wildlife, responses as a whole may be used to evaluate human actions and factors that contribute to environmental awareness.

2(b) PRACTICAL UTILITY / USERS OF THE DATA

The information will primarily be used by researchers in the EPA's Office of Research and Development to inform the agency about methods for determining awareness of the public about potential unintended environmental consequences of pesticide use. Survey results will be communicated to the larger scientific community through scientific papers in peer-reviewed publications and presentations at scientific conferences. Information also will be used by National Park Service (NPS) and Endangered Species Recovery Program (ESRP; California State University, Stanislaus) biologists who monitor local wildlife populations.

EPA investigators will prepare a location-specific summary of information from this study for use by the local community. Participants in the survey, if they desire, will be sent a summary of survey results, as written for a general audience.

3. NONDUPLICATION, CONSULTATIONS, AND OTHER COLLECTION CRITERIA

3(a) NONDUPLICATION

The household and household service rodenticide use and awareness survey does not duplicate any existing information. This study closely follows the design and conduct of several previous studies, but no previous study has been conducted on household and household service use and awareness of chemical effects on the environment as specifically related to rodenticides. Some information about pesticide use is available from the California Department of Pesticide Regulation, but neither as detailed as the information sought through this study nor integrated with ecological data.

3(b) FEDERAL REGISTER NOTICE

The announcement of a public comment period for this ICR was published in the Federal Registrar on 24 July 2006. The Federal Registrar announcement is in PRAMS.

3(c) CONSULTATIONS

The following people have been consulted in California:

Dr. Brian Cypher, Endangered Species Recovery Program, California State University, Stanislaus (Bakersfield Field Station)

Mr. Bob Hosea, California Department of Fish and Game

Dr. Seth Riley, Santa Monica Mountains National Recreation Area

Dr. Ray Sauvajot, Santa Monica Mountains National Recreation Area

The following scientists have also been consulted:

Dr. Angela Mertig, Middle Tennessee State University

Dr. E. Henry Lee, US EPA, Western Ecology Division

The following scientists provided favorable extramural peer-review of the research plan:

Dr. Larry Baker, Water Resources Center, University of Minnesota, St. Paul, MN

Dr. Lisa Campbell, Nicholas School of Environment and Earth Sciences, Duke University Marine Laboratory, Beaufort, NC

Dr. Paige Warren, Department of Natural Resources Conservation, University of Massachusetts, Amherst, MA

The following scientists provided favorable internal peer-review of the research plan:

Dr. Dan Campbell, US EPA, NHEERL, Atlantic Ecology Division (AED)

Dr. Brian Hill, US EPA, NHEERL, Mid-Continent Ecology Division (MED)

Dr. Steve Jordan, US EPA, NHEERL, Gulf Ecology Division (GED)

Mr. Denis White, US EPA, NHEERL, Western Ecology Division (WED)

The overall response from all consultations was favorable, and suggested revisions were received from the consultations. All suggestions for revisions have been responded to in a response memo. The only major concern of reviewers (Steve Jordan and Larry Baker) was that the data collected were not applicable for risk assessment. Response to this concern emphasized that a formal risk assessment was not within the scope of this project, and that data to be collected will NOT be applied to risk assessment. All peer review documents have been forwarded to OMB separately in hard copy form.

3(d) EFFECTS OF LESS FREQUENT COLLECTION

The questionnaire information will be collected only once during the study. This factor, therefore, does not apply to this study.

3(e) GENERAL GUIDELINES

We have adhered to all of OMB's general guidelines.

3(f) CONFIDENTIALITY

We will adhere to all standard steps to maintain privacy. These include the exclusion of personal identifiers from the statistical database and the storage of hard copies in locked files.

No personal identifiable information will be collected on the survey, and addresses will be used for mailing purposes only. Detailed geographical data will be used by only the PI in a Geographic Information System for purposes of spatial analysis of responses (e.g., distance to natural areas). However, as appropriate, generalized geographic data analyzed will be presented in statistical context. If a statistical context is not appropriate, results will be displayed via means by which privacy of geographical identity is preserved (i.e., visual displays will not provide sufficient precision to identify individual houses on a street or by any other geographic identifiers). Contractor involvement will be monitored by required hard copies that will be stored at EPA after the contractor has completed data processing. The contractor has agreed to observe the rules of confidentiality regarding information provided by respondents. We will control access to the data in accordance with Federal privacy regulations as administered under the EPA (EPA Rule 40 CFR 26 and EPA Order 1000.17) and OMB Circular A-110. Further questions may be directed to Richard Hermann at the EPA NHEERL Human Studies Division (919-966-6217).

3(g) SENSITIVE QUESTIONS

We will ask respondents to indicate the year in which they were born to calculate respondent age. We will also ask respondents to indicate annual household income as a rank-order variable (e.g., $50,000-74,999). Answering each of these questions by the respondent is on a strictly voluntary basis.

4. THE RESPONDENTS AND THE INFORMATION REQUESTED

4(a) RESPONDENTS / SIC CODES

This study will be conducted among residents of the southwestern quadrant of Bakersfield, as well as portions of Thousand Oaks, Agoura Hills, Calabasas, and Westlake Village. Adult residents will complete the questionnaire. The complete sampling design is described in detail in part B2.

4(b) INFORMATION REQUESTED

(i) Data Items

The questionnaire can be found in the Appendix of this document, and a detailed discussion of the questionnaire design is presented in B.2. The requested information includes questions specific to: 1) if rodenticides are used, 2) specific events that resulted in rodenticide application, 3) what type(s) of rodenticide are used, 4) target species, 5) timing, quantity, and specific locations of application, 6) how both bait containers and carcasses (if found) are disposed of, 7) awareness of incidental effects of rodenticide use, 8) attitudes toward incidental poisoning, 9) what rodent control method would be used (e.g., baited snap traps) if anticoagulant products were not available, 10) attitudes toward safety standards for pesticide use (e.g., clarity of product safety labeling and directions for use), and 11) basic demographic information (e.g., sex, ethnicity, number of people in household).

No maintenance of records by respondents is required for this study.

(ii) Respondent Activities

Residents and service providers identified via random selection will be asked to complete a questionnaire that will be available in both English and Spanish. Participants will be requested to seal the completed questionnaire into a provided already-stamped envelope and return the questionnaire to the project manager.

5. THE INFORMATION COLLECTED – AGENCY ACTIVITIES, COLLECTION METHODOLOGY, AND INFORMATION MANAGEMENT

5(a) AGENCY ACTIVITIES

EPA's Risk Characterization Branch will be responsible for administering the questionnaire, answering respondent questions, reviewing data quality, converting the data to electronic form, developing and maintaining the database, and preparation of reports and peer-reviewed publications. An EPA contractor may perform some of these activities.

5(b) COLLECTION METHODOLOGY AND MANAGEMENT

All data will be reviewed for unusual or unacceptable values, and corrected as needed. The questionnaire data will be verified through comparisons with original records. Statistical data will be maintained in electronic format using the SPSS (SPSS, Inc.; formerly Statistical

Package for the Social Sciences) system. Access to the data will be controlled in accordance with Federal privacy regulations. Particular user groups (National Park Service and ESRP) will be provided with a summary of the data excluding identifier information, but will not have open access to the data.

5(c) SMALL ENTITY FLEXIBILITY

Not applicable.

5(d) COLLECTION SCHEDULE

Data collection for study will be conducted during February – July of 2007. The study time line is (a) prepare questionnaire packets by February 2007, (b) distribution of questionnaires between February and April 2007, (c) collect the returned questionnaires prior to the end of May 2007, and (d) conduct a non-response follow-up between June and July 2007. The purpose of the non-response follow-up is to determine whether the non-response respondents are demographically different from respondents to the actual survey. We will examine whether responses to key questions and demographic characteristics are significantly different (statistically) to respondents from the actual survey, and we will report the results and any potential bias in resulting peer review publications, and discuss associated implications. Data sets will be delivered by September 2007. The data sets will be extensively reviewed for quality assurance prior to any analysis.

6. ESTIMATING THE BURDEN AND COST OF THE COLLECTION

6(a) ESTIMATING RESPONDENT BURDEN

Based on survey design, as well as similar information collection by the project manager and for similar studies, it is estimated that each respondent will spend 20 minutes or less completing the questionnaire. This includes the time for reviewing the informed consent form and the instructions, filling out the questionnaire, and returning the questionnaire. No record keeping is required.

Estimated Respondent Burden:

Respondent Activity	Estimated Number of Respondents	Burden Hours	Frequency	Annual Reporting Burden	Annual Cost
Complete Questionnaire	4,500	0.33	1	1,485	$26,463[a]

[a]$17.82/hour (average hourly wage for private industry, 2005; most current figure available)

ANNUAL REPORTING BURDEN: 1,485 hours

ANNUAL RESPONDENT COST: $26,463

NO ANNUAL RECORD KEEPING BURDEN

6(b) ESTIMATING RESPONDENT COSTS

The only respondent cost is responding to the questionnaire. The cost estimate for the respondent is based on the average hourly earnings for private industry workers reported by the most currently-available US Bureau of Labor Statistics' National Compensation Survey (June 2005) at $17.82 per hour. Given the 0.33 hour burden, the cost per respondent is $5.88.

6(c) ESTIMATING AGENCY BURDEN AND COST

	Burden Hours / Unit				Cost ($)	
Agency Activities	Contractor	EPA	Units	Total Hours	Contractor $19.75/hour	EPA $25/hour
Prepare and format questionnaire	0	180	1	180	$ 0	$4,500
Prepare questionnaire packages	0.007	0.008	9,000	135	$ 1,244	$1,800
Process collected questionnaires	0.05	0.01	4,500	270	$ 4,444	$1,125
Prepare statistical data sets	270	5	1	275	$ 4,937	$125
Project management / data analysis	270	850	1	1,120	$ 4,937	$21,250
TOTAL				1,980	$15,562	$28,880

AGENCY TOTAL ANNUAL BURDEN: 1,980 hours

AGENCY TOTAL ANNUAL COST: $44,442

The contractor agency burden estimates were based on our prior experience in developing and gathering information for research purposes. The agency costs are based on a GS-11(2). This ICR is a one-time collection of information with analysis extending into future years.

6(d) ESTIMATING THE RESPONDENT UNIVERSE AND TOTAL BURDEN AND COSTS

Based on sample size requirements, the respondent universe is 9,000 adults for the questionnaire; 4,500 are expected to respond. Thus, the total estimated respondent burden for this study is 1,485 hours and $26,463.

6(e) BOTTOM LINE BURDEN HOURS AND COST TABLES

The estimated respondent burden for this study is 1,485 hours and $26,463. The estimated agency cost for conducting this study is 1,980 hours and $44,442.

6(f) REASONS FOR CHANGE IN BURDEN

Not applicable as this is a first time collection.

6(g) BURDEN STATEMENT

Respondent burden for this collection is estimated to average 20 minutes or less and will require no record keeping. This includes the time for reviewing the informed consent form, reading the instructions, filling out the questionnaire, and returning the questionnaire. The burden statement will appear on the survey as follows:

"The public reporting and recordkeeping burden for this collection of information is estimated to average 0.33 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed survey to this address."

B. INTRODUCTION

This section provides an overview of the survey objectives, key variables, and survey design, implementation, and data analysis.

1. SURVEY OBJECTIVES, KEY VARIABLES, AND OTHER PRELIMINARIES

1(a) SURVEY OBJECTIVES

This study will assess household and household service impacts on the sustainability of urban ecosystems. The study objective is to measure household and household service use of rodenticides and assess residential awareness of how daily activities possibly impact the environment by directly asking participants a series of different questions that, when taken as a whole, may be used to evaluate human actions and factors that contribute to environmental awareness. EPA's Office of Research and Development will consider the findings of this study in conjunction with other research related to natural resource sustainability, individual decision-making related to the environment, pesticide use, urban ecology, environmental impacts of human activities, and land use effects on ecosystems.

EPA does not wish to estimate the overall prevalence of rodenticide use or environmental impact for the general U.S. population on the basis of this information collection. No attempt will be made to generalize the observed prevalence of rodenticides to any other community or nation as a whole.

1(b) KEY VARIABLES

The key variable rodenticide use is the respondent's self-reported use of rodenticides. Other rodenticide use-related variables of interest include information about rodenticide application (i.e., by whom, quantity, location(s)), specific reasons for use), adherence to directions for product use, and disposal of dead animals and pesticide packaging materials.

The key variable awareness is the respondent's awareness of the potential for inadvertent poisoning of non-rodent animals. Other rodenticide awareness-related variables include whether knowing about wildlife exposure changes respondent attitudes about how their actions affect ecosystem sustainability. Questions to assess attitudes toward threatened and endangered wildlife (versus non-threatened and endangered wildlife) and stance on environmental issues will also be used as means to determine whether differences in awareness exists for individuals who have varying personal intimacy with environmental matters. Relationships between participation

in environmentally-related activities, interest in the environment, and knowledge about particular species and the environment has been well established (e.g., Kellert, S.R., 1985, Biological Conservation 31:167-189). However, information linking such participation, knowledge, and interest to awareness of how specific activities might affect environmental components is lacking.

The key variable safety is the respondent's attitude toward rodenticide product safety and use. Respondents are asked to comment on whether rodenticide packaging contains adequate safety and use information, and whether directions for use are clear. Information is also sought as to whether respondents have experienced pesticide poisoning of children or pets.

The key variable environmental activity (household survey only) is the level to which, as compared to other respondents, the respondent participates regularly in activities related to the environment.

Demographic and socioeconomic information will also be sought from household participants including age, sex, race/ethnicity, household income, household size, and formal education completed. Also to be collected includes reasons for selection of location of residence, and whether the respondent rents or owns. Household services will be asked to describe their business (e.g., food service). These demographic and socioeconomic variables will be used to determine if socioeconomic factors can help predict household rodenticide use.

2. SURVEY DESIGN

2(a) TARGET POPULATION

The target population will be the household and household service providers of the communities of interest. The target population will be stratified by density, as measured by household type (e.g., low density residential versus high density residential) to ensure internal validity. The study will fully characterize the socioeconomic characteristics of household respondents so that results of this study may be compared with other similar studies in the future.

In keeping with EPA's multi-year research plans and the study objective, this information collection will examine associations between human activities and ecosystem health and sustainability. The two locations in California were selected because of availability of long-term data from monitoring of local wildlife populations, possible exposure of wildlife to rodenticides,

and geographical location of these study areas along the urban-rural interface. Selection of household and household service individuals as the target population is responsive to wildlife movements in residential areas, which has not been a past research priority.

2(b) SAMPLE DESIGN

(i) Sampling Frame

The sampling frame will consist of a list of occupied (i.e., in-use) street addresses of residents and household service providers within the study areas from which the random sample will be drawn. For Bakersfield, we will acquire these data from the Government of the City of Bakersfield, Department of Geographic Information Services, which maintains an up-to-date list of in-use street addresses for Emergency 911 response databases. For SMMNRA, we will acquire these data from the National Park Service, which includes parcel maps labeled with street addresses. Identification of general areas to which surveys will be sent is based on animal movement data (Riley et al., 2003, *Conservation Biology* 17:566-576; Seth Riley, National Park Service, personal communication; Brian Cypher, California State University, Stanislaus, personal communication) collected by the NPS and ESRP via radiotelemetry. Additional spatial evaluation (e.g., households or household services closer to or further from natural areas) will be completed post-hoc.

(ii) Sample Size

Approximately 400 responses are necessary to achieve a desired sampling error of 5% at the alpha (α) = 0.05 level of significance. To maintain a consistent sampling error while accounting for two levels of analysis (users vs. non-users, and two household strata), the desired statistical power (see Appendix B), and an assumed 50% response rate, surveys are expected to be received from approximately 3,200 households across both locations. Therefore, a total of approximately 6,400 surveys will be mailed to households. Of the approximately 1,640 household services in total across both locations, approximately 820 are expected to respond. Thus, a total of approximately 8,040 surveys will be mailed, or approximately 4,020 for each study area. To take a conservative approach and accommodate for "bad" surveys (and results that have to be discarded), total sample size for surveys mailed to each study area will be approximately 4,500 (or 9,000 total across both locations). The populations of each area are sufficient to provide the necessary sample size. Sampling locations will be selected based on a

comparison of known animal movements collected via radiotelemetry, such that all possible survey respondent addresses are located within areas where animals of interest are known to exist. Geographical extent (i.e., boundaries) of sampling area will be finalized through discussion with NPS and ESRP biologists.

(iii) Stratification

To create a basis for ensuring proper representation via random sampling, addresses in both areas will be stratified by housing density, as determined by housing type. This will result in two strata: single family homes, and multiple family units (e.g., apartment complexes). A third stratum, commercial, will be considered separately in both sampling and analyses. This information is apparent in addresses (i.e., apartments have unit numbers), and will be verified via ground truth and aerial photo. Stratification allows for sampling to include overrepresentation (thus appropriate representation) of strata containing fewer potential respondents.

(iv) Sampling Method

A disproportionate sampling method (oversampling of strata containing fewer eligible participants) will be used to sample from the two household strata. All addresses within each stratum will be eligible for selection. Disproportionate sampling will ensure proper representation of strata that may be neglected based on a purely random sampling (without stratification) of the target population. Because fewer possible commercial addresses exist within each study area, a complete enumeration of commercial addresses will be used to achieve desired statistical power based on the assumed response rate. Thus, sampling is at the stratum level. As a result of this sampling method, weights will be applied to univariate statistical analyses to accurately represent the actual population distribution of each area and allow us to examine the entire sample for each location as a whole. Data will also be analytically assessed for strata-level effects by use conventional statistics.

(v) Statistical Approach

The statistical approach proposed for this information collection is the Tailored Design Method, a standard method employed by many academic investigators in social science studies (full citation: Dillman, D. 2000. Mail and Internet surveys; the tailored design method. Second edition, John Wiley and Sons, Inc., New York, NY). Based on previous experience with

environmental attitude surveys, the major problem is non-response. The Tailored Design Method addresses this by use of multiple survey mailings and providing a return envelope and postage.

A random sampling method will be used to ensure internal validity. The residents of the communities of interest will provide a reasonable study population that will fully meet the objectives of this information collection. Analysis will be completed by means of which results of this study can be compared to other future studies. Standard statistical tests that are routinely used for social science survey result analysis will be applied to survey results (see section B.5).

2(c) QUESTIONNAIRE DESIGN

(i) Household Questionnaire

The household questionnaire is divided into several general sections of related questions: rodenticide use, products and methods, agent of application, product self-application, safety and environmental issues, household activities, and demographic and socioeconomic information.

The rodenticide use section is required to determine whether a particular individual uses a rodenticide (1), types of rodents and other animals (2) for which control is sought, and event(s) causing control to begin (3). These questions will allow for differentiation between respondents who use rodenticides and those who do not, and to quantify specific reasons for rodenticide use (3) or non-use (1a). If individuals report that they do not use rodenticides (1), question 1a is included to determine why rodent control has not occurred. Individuals who answer question 1a, are then asked to skip ahead to question 14, because questions 2-13 are irrelevant to non-users.

The products and methods section includes questions about specific rodenticides used, disposal, locations of application, frequency of use, and storage of products. Discrimination between use of physical and chemical rodenticides may be related to other variables measured in this survey (e.g., awareness of potential local effects on wildlife) (4, 5). Details about products (5a, 5b, 5c) will evaluate user knowledge about products on their property, as well as specific reasons for selecting specific products for use (11). Disposal, location of application, storage, and frequency of use information (5d, 5e, 6-10) may provide insight toward where inadvertent exposure may take place. Storage of unused products (such as in garages) has the potential to inadvertently attract non-target animals. This information will be used to assess user attitudes toward proper use of chemicals and knowledge of rodent-control products.

The agent of application section focuses on identifying the individual who applies the rodenticides, and distribution of product safety information from an external application company (if appropriate). Determining the primary person responsible for application (12) will serve as a foundation for assessment of product use awareness and differences between product knowledge of self-users and those who hire external applicators (e.g., professional pest control company). Self-applicators may then skip to question 13 for more specific reporting about individual application. For those who seek external application, these questions determine whether users receive safety information about products (e.g., harmful if ingested) that could potentially result in harm (12a, 12b). Acquisition of possible side effects of products to humans, pets, and the environment (12c) is important information for linking human knowledge and decision-making to the local environment. Seeking information elsewhere (12d) and the relationship to other questions in this section also provides information about level of concern about product safety beyond information supplied (or not supplied) by external applicators. Those who answer 12a-12d are to then skip to question 14.

The product self-application section (to be skipped by those who answer 12a-12d) is focused on specific means by which individuals self-apply rodenticide products. Specific application protocol (13, 13a) is an indicator of whether or not manufacturer directions for product use are being followed. Information on ease of directions for use is important for determining whether attitudes about the environment cause people to be more or less willing to use chemicals depending on difficulty of instructions (13b). Also requested is information similar to that asked to individuals who seek application from an external source (12c) to link decision-making to the external environment (13c).

The safety and environmental issue section focuses on concern about accidental poisoning, desired availability of rodenticide products, and awareness of and reaction to possible effects on wildlife. Accidental poisoning information (14, 14a, 15, 15a) will be used to determine whether personal experience with poisoning exists and, if so, is a factor in selection of rodent control methods. Information about attitudes toward rodents (16) will be useful to determine if personal attitudes toward rodents is related to level of environmental awareness. The need for rodenticides and their availability for application (17) will be used to determine latitude of acceptance and the role of these products in society. Responses will be coded to

develop a scale for comparison across respondents. This question is purposely asked before wildlife- and environment-related questions (18-20) to avoid the potential for an ordering effect if participants read wildlife-related questions first. Social theory (e.g., Theory of Predicted Behavior) may be applied to responses about how knowledge may influence decision-making (18, 19) as well as insights toward mechanisms by which individuals make decisions related to their personal actions. Questions addressing participant awareness of possible wildlife exposure are necessary for evaluating extent of awareness (20) and whether the source of this knowledge is reputable (20a). It is important to reemphasize that it is not our intent to influence behavior.

The household activity section is focused on household activities as related to the environment (21, 22). Past social science research suggests participation in activities related to the environment is directly related to environmental knowledge, and actions related to the object of interest (Theory of Reasoned Action). Taken together, these responses will lead to a more complete understanding of awareness by allowing for linkages between participation and interest as well as the knowledge and awareness variables described previously. Responses to these questions will be compared to individual rodenticide use and rodenticide-wildlife awareness.

The demographic and socioeconomic section (23-33) will be used to determine relationships between particular socioeconomic and demographic characteristics and rodenticide use. Also included is a question about location of residence (23), which will quantify information about factors that influence the participant selection of residence and may be tested for relationships with environmental participation and interest (21, 22). The final question (34) allows respondents to indicate if they are interested in receiving a summary of results from this survey.

(ii) Household Service Questionnaire

Similar to the household questionnaire, the household service (business) questionnaire will contain the following sections: rodenticide use, products and methods, agent of application, product self-application, and safety and environmental issues. The only differences between the two questionnaires will be that the household service questionnaire will contain one question to describe the service type (e.g., food service), one question related to trash storage, and will not contain the household activity and demographic and socioeconomic sections. Questions will

adapted only to the extent that the term "household" will be replaced by "business," and any response choices irrelevant to businesses will be eliminated.

(iii) Style of Questions

Most questions have forced choice between multiple responses. One question provides opportunities for the respondent to provide an open (free-form) response (e.g., 8). Open responses are an easy way to ask for information about continuous variables, or when responses have the potential for large variation in specifics. Combining multiple choices with open responses is used to gain further detailed information about a particular question when an innumerable number of responses are possible to avoid forcing a response that may be inappropriate (see questions that include an "a" suffix after the question number). Such responses may also provide valuable insight to potential answers that can make up a large proportion of responses but were not included in forced categories on the survey, and are identified as potentially important for non-response follow-up.

Where appropriate, possible responses to questions provide the respondent with an opportunity to indicate that the answer is unknown ("unsure" or "I don't know"), or opportunity to provide an alternative answer ("other"). Questions 5b (knowledge of active ingredient), 12a, 12d (safety information), 18 and 20 (safety and environmental issue), 21-22 (household activity), 24-31, and 33 (demographic and socioeconomic questions) require a forced choice. It is important to reemphasize that answering each survey question is strictly voluntary.

3. PRETESTS AND PILOT TESTS

This questionnaire was designed in consultation with a telephone survey completed by the California Department of Pesticide Regulation in 2000 that sought general information about pesticide use from San Diego area residents. This study constitutes the pretest of the survey.

The current layout of the questionnaire has been improved to address the more specific pesticide category of interest, differences in research scope, and the context of research within a residential setting using a mail survey. Non-social scientist researchers have reviewed the questionnaire as part of the pilot consultation process during development.

4. COLLECTION METHODS

Individual packets will be prepared for the survey sample in each study area, and implementation will consist of five separate mailings: 1) prenotice, 2) first survey mailing, 3) reminder postcard, 4) second survey mailing, 5) non-response follow-up (see Appendix A). A prenotice will be sent to participants as a forewarning that the survey will be received. The prenotice will contain information about the purpose of the study and contact information for the project manager and NHEERL Human Research Protocol Office. Several days after the prenotice mailing, the first survey mailing will take place. Each survey packet will consist of a cover letter explaining the purpose of the survey, that the survey is strictly voluntary, a disclosure of privacy, and contact information for the project manager and NHEERL Human Research Protocol Office. Also enclosed within a plain envelope with a gummed flap will be the survey booklet (questionnaire), and a self-addressed and stamped return envelope. To accommodate the large Hispanic/Latino population of southern California, the survey booklet will contain both English and Spanish versions of the survey. Return-stamped envelopes will be provided for easy survey return by respondents. Each questionnaire will have a unique serial number printed on each page for identification purposes. The survey packets will be mailed, and a record of serial numbers and corresponding addresses will be kept for mailing purposes only (i.e., so that later mailings are not duplicated for surveys that are returned). Approximately one week after the first survey packet is sent, a reminder postcard will be sent to thank those who have already returned their survey and remind those who haven't to complete and return their survey. Finally, approximately a week after the reminder postcard is sent (approximately two weeks after the initial survey mailing), a second survey mailing will take place. The second mailing will contain the same materials as the first survey mailing. Those participants who indicate on the survey that they would like to receive a summary of survey results (question 34) will be sent this information after data collection and general data analysis are completed.

A short (i.e., can be completed in less than five minutes time) non-response follow-up questionnaire will be completed via telephone during May-June 2007 to a randomly drawn sub sample of members of the survey sample (non-respondents) who did not return a completed survey (minus those who do not wish to participate). A random sample of 50% of non-respondents will be drawn for both households and household services for the non-response

follow-up. From these non-response subsamples, completed interviews will be obtained for 10% of households and 20% of household services (because of the smaller initial number) to allow for statistical assessment of potential non-response bias that might exist between survey respondents and non-respondents. The non-response follow-up will focus on key variables from the original survey, as well as items from preliminary analysis that may have caused resistance of response or possible responses that were indicated surprisingly often by respondents but not included on the original survey.

As the questionnaires are returned, the project manager will collect the sealed envelopes containing the survey and keep track of the unique identification numbers and date of return for the surveys that have been returned. The surveys will be transferred to an EPA contractor at a secure facility. The only identifier will be the pre-printed unique identification number on the questionnaire. Surveys will be stored in a locked filing cabinet at a secure facility, separate from the statistical information on the remainder of the questionnaire. After return of each survey, mailing information will only be kept for respondents who wish to receive a summary of survey results, but mailing information will be kept secure and separately from individual responses provided on the survey (i.e., immediately upon return of the survey and recording of the return, unique identification numbers will no longer be associated with respondent mailing addresses).

The 2000 California Department of Pesticide Regulation survey had a 72% response rate, but computerized automatic random digit dialing of telephone numbers allows for easier re-attempt to contact non-respondents (although telephone surveys are much more labor intensive than mail surveys). Based on literature presenting results of similar surveys (e.g., 56%; Koval and Mertig, 2004, Wildlife Society Bulletin, volume 32(1), pages 232-243), we anticipate at least a 50% response rate. Researchers will seek to minimize non-response via more than one survey mailing, and availability of both English and Spanish versions of the survey.

5. ANALYZING SURVEY RESULTS

5(a) DATA PREPARATION

Data preparation for analysis will involve two steps. First, short answer responses from the completed questionnaires will be entered into two separate electronic databases using Microsoft Excel, and following numerical coding developed by the project manager. By

entering survey responses twice, the two databases may be directly compared to identify responses that were entered incorrectly. A sample of questionnaires (5%; defined alpha value for survey analysis, as discussed below) will also be visually compared with the entered data to ensure that individual answers were not incorrectly entered in both databases. The resulting statistical data file will be held as the primary data set. Second, responses from long-handed answers, such as if participants are asked to provide reasons for a particular answer, will be entered by hand into a database using Microsoft Word. Long-handed answers also will be entered twice in separate databases and visually compared to identify and correct inconsistencies.

The statistical data will then undergo an extensive quality assurance review by EPA investigators to identify erroneous and inconsistent responses. The review, to be completed by the project manager, will involve both the cross-tabulation of results and a thorough review of individual questionnaires. As each issue is identified and resolved, all changes will be recorded in the preparation of an analytic data asset and generation of secondary variables. Quality assurance documentation will include all edited values, the date of edits made, and initials for identification of the editor.

5(b) DATA ANALYSIS

Data analysis will entail several statistical analyses and data manipulations. Data from each study area (SMMNRA and Bakersfield) will be analyzed separately (i.e., data from the two study areas will not be pooled). The SPSS Complex Samples module will be used to measure design effects and calculate appropriate standard errors. Statistical analyses will be completed at the univariate (descriptive results of a single variable), bivariate (relationship between two variables), and multivariate (relationships among three or more variables) levels to derive a complete understanding of relationships among respondent characteristics and survey responses that have been provided. Such analysis will be used to construct statistical models of factors that influence each of the key variables. Depending on the quantity and distribution of responses, as a result of disproportionate sampling, weights will be applied to univariate analyses such that results can be generalized to each individual study area (responses between the two areas will not be grouped together for statistical evaluation). However, exact weight values cannot be determined until response rates are known. For the variable rodenticide use, logistic regression will be used to evaluate relative significance of independent variables. Ordinal regression will

be used for evaluation of other key variables. Factor analysis will be used to complete data reduction and reliability assessment of independent variables. In several of the survey questions (see Appendix), participants are asked to provide reasons for a particular response. These reasons that are provided may assist researchers in in-depth understanding of why particular answers were selected, and as rationale for identifying new research questions for further study.

5(c) REPORTING OF RESULTS

Reporting of results will take place in several forms. This is the first field study to complete a direct and detailed assessment of the contribution of households to sustainability of urban ecosystems. We anticipate that several manuscripts will be submitted to peer-review in scientific journals in order to share results of this research with the scientific community. The main papers will focus on the complexity of urban ecosystems and human impact on wildlife in regard to rodenticides, and environmental awareness of urban residents. Results of this study will also be made available to (besides within the EPA organization) survey respondents, visitors to the Santa Monica Mountain National Recreation Area, clients of ESRP, and any other interested individuals.

Residential and Commercial Awareness and Use of Rodenticides in Southern California Urban Ecosystems

APPENDIX A: Rodenticide Use and Safety Questionnaire

Part I: Survey Prenotice

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL HEALTH AND ENVIRONMENTAL EFFECTS
RESEARCH LABORATORY
WESTERN ECOLOGY DIVISION
200 S.W. 35TH STREET, CORVALLIS, OR. 97333

OFFICE OF
RESEARCH AND DEVELOPMENT

XX February 2007

«address1»
«city_name», «state_prov_code» «zip_postal_code»

Dear Resident:

In a few days you will receive a request in the mail to fill out a questionnaire for an important research project being conducted by the US Environmental Protection Agency in cooperation with the National Park Service and California State University, Stanislaus. The goals of this study are to better understand 1) what rodent control products are used (if any), 2) which products are preferred by users, and 3) how chemical-based rodenticides are getting into the environment from locations of use (e.g., households and businesses). The information gathered from participants in this survey will be used to develop better methods to limit product impact on animals other than those targeted by a particular rodenticide product.

I am writing to encourage your participation in this questionnaire, and because I understand that many people like advance notice that they will be contacted. Information collected from this study will help researchers and natural resource managers make decisions involving natural resources with local residents' diverse opinions and interests in mind.

If you have any questions about this project now or after you receive your questionnaire, please feel free to call me toll free at XXXXXXX. If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact Richard Hermann, Director, Human Research Protocol Office, US EPA, National Health and Environmental Effects Research Laboratory, by phone: (919) 966-6217, fax: (919) 966-6212, e-mail: hermann.richard@epa.gov, or regular mail: MD 58A, Research Triangle Park, NC 27711.

It’s only with the generous help of people like you that our research can be successful. Thank you in advance for your time and consideration.

Sincerely,

Anita Morzillo
Project Manager

Part II: First Survey Mailing – Cover letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL HEALTH AND ENVIRONMENTAL EFFECTS
RESEARCH LABORATORY
WESTERN ECOLOGY DIVISION
200 S.W. 35TH STREET, CORVALLIS, OR. 97333

OFFICE OF
RESEARCH AND DEVELOPMENT

XX February 2007

«address»
«city», «state» «zip»-«four»

Dear Resident:

Recently, you should have received a notice about an upcoming survey about rodent pest control. I am now writing to ask for your help in a study being conducted by the US Environmental Protection Agency in cooperation with the National Park Service and California State University, Stanislaus. The goals of this study are to better understand 1) what rodent control products are used (if any), 2) which products are preferred by users, and 3) how chemical-based rodenticides are getting into the environment from locations of use (e.g., households and businesses). The information gathered from participants in this survey will be used to develop better methods to limit product impact on animals other than those targeted by a particular rodenticide product. Information collected will help researchers and natural resource managers make decisions involving natural resources with local residents' diverse opinions and interests in mind.

We are contacting a random sample of residents and businesses in your area to ask about rodent pest control. We are interested in the wide range of information that exists from both people who use and do not use rodent control products. There are no right or wrong answers. Your opinions are very important to us and will make a difference for resource management in California.

Your responses will be kept private. The survey has identifying information for mailing purposes only. Your address will not be associated with your responses and your privacy will be protected to the maximum extent allowable by law. Your response to this survey and any of the questions is completely voluntary and it should take about 20 minutes to complete. You indicate your voluntary agreement to participate by completing and returning this survey. Please complete this questionnaire at your earliest convenience, seal it in the enclosed envelope, and drop it in any mailbox. Return postage has been provided for your convenience.

If you have any questions about this project, please feel free to call me toll free at XXXXXXX. If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact Richard Hermann, Director, Human Research Protocol Office, US EPA, National Health and Environmental Effects Research Laboratory, by phone: (919) 966-6217, fax: (919) 966-6212, e-mail: hermann.richard@epa.gov, or regular mail: MD 58A, Research Triangle Park, NC 27711.

Residential and Commercial Awareness and Use of Rodenticides in Southern California Urban Ecosystems

Thank you very much for your help with this important study.

Sincerely,

Anita Morzillo
Project Manager

P.S. This survey is intended for someone who is at least 18 years of age and a resident of California. If the person to whom this is addressed does not fit this description, please give this survey to a person in your household who does. If no one in your household fits this description, please write on the survey that no one was eligible to complete it and send the survey back to me. Many thanks.

Residential and Commercial Awareness and Use of Rodenticides in Southern California Urban Ecosystems

OMB #
Expires

Part III: Questionnaire (to be used for both first and second mailings) update

A. HOUSEHOLD VERSION

This survey is about rodents and rodenticides. Rodents include animals such as mice, rats, and gophers. Rodenticides are materials used to control rodents. For this survey, please consider any actions that have been taken on your property to control rodents within approximately the past 5 years.

1) Have you or anyone else tried to control rodents or other animals on your property? (*Please select ONE*)

[ ] Yes -- *Please go to question 2*
[ ] No -- *Please go to question 1a*
[ ] Unsure -- *Please go to question 1a*

1a) Which of the following are possible reasons why no one has tried to control rodents or other animals on your property? (*Please select all that apply*)

[ ] There have not been many rodents on my property within the last year
[ ] I have seen rodents on my property but they have not acted as pests
[ ] I have experienced rodent damage on my property, but have chosen not to do anything about it
[ ] I just haven't gotten around to it
[ ] I don't like hurting animals
[ ] Other (*Please specify*) _____

STOP: IF YOU ANSWERED QUESTION 1a, PLEASE SKIP TO QUESTION 14

2) Which of the following types of animals have you or someone else been trying to control on your property? (*Please select all that apply*)

[ ] Mice
[ ] Rats
[ ] Squirrels
[ ] Gopher
[ ] Woodrat
[ ] Other animals (*Please specify*) _____

Burden statement moved to bottom of page

3) What caused you (or someone else) to begin controlling these animals (identified in #2) on your property? (*Please select all that apply*)

[ ] Indoor observation of pest animal(s)
[ ] Outdoor observation of pest animal(s)
[ ] Property damage by pest animal(s) on my property (e.g., chewing on stored cloth materials, holes in walls)
[ ] Property damage by pest animal(s) on a neighbor's property
[ ] Damage to landscaping on my property (including landscaped slopes)
[ ] Damage to landscaping on a neighbor's property (including landscaped slopes)
[ ] I have not seen the pest animal(s), but rodenticides are used as a preventive measure against it/them
[ ] Rodenticides are applied as a routine yard care treatment by a hired company
[ ] Other (*Please specify*) _____

Now we would like to ask specifically about what rodenticide products and methods are used on your property, as well as details about application, disposal, and storage.

4) The following rodent control methods work through physical means. Which, if any, of the following physical rodenticides have been used on your property? (*Please select all that apply*)

[ ] Snap traps
[ ] Glue boards
[ ] Live traps
[ ] Shooting
[ ] Electricity (e.g., rat zapper)
[ ] Unsure
[ ] Other (*Please specify*) _____
[ ] None

5) Have chemical rodenticides been used on your property? (*Please select ONE*)

[ ] Yes -- *Please go to question 5a*
[ ] No -- *Please go to question 6*
[ ] Unsure -- *Please go to question 6*

5a) If you know the brand names of chemical rodenticides used on your property, please list them here.

_____

5b) Do you know the active ingredient in any of the chemical rodenticides that have been used on your property? (*Please select ONE*)

[ ] Yes
[ ] No

5c) Which of the following types of chemical rodenticides have been used on your property? (*Please select all that apply*)

[ ] Anticoagulants (e.g., d-Con; these keep the rodent's blood from clotting)
[ ] Dehydration (e.g., Rodetrol)
[ ] Fumigants (e.g., gas canisters)
[ ] Nerve agent (e.g., Bromethalin)
[ ] Zinc Phosphide
[ ] Unsure
[ ] Other -- *Please specify* _____

5d) How are rodenticide chemical packaging materials disposed of? (*Please select ONE*)

[ ] Put in household trash as-is
[ ] Put in household trash wrapped well in plastic
[ ] Taken to hazardous waste disposal site
[ ] I am not sure because they are disposed of by a professional or yard care company
[ ] Other (*Please specify*) _____

5e) How is unused/unconsumed chemical bait disposed of? (*Please select ONE*)

[ ] Put in household trash as-is
[ ] Put in household trash wrapped well in plastic
[ ] Poured down drain or toilet inside of house or detached building
[ ] Poured down outdoor drain
[ ] Taken to hazardous waste disposal site
[ ] Dumped onto ground on property
[ ] Washed away on ground or lawn, such as with a garden hose
[ ] Stored for later use
[ ] I have never noticed any unused/unconsumed bait
[ ] I am not sure because it is disposed of by a professional or yard care company
[ ] Other (*Please specify*) _____

6) Where are rodenticides (physical or chemical) applied on your property? (*Please select all that apply*)

[ ] Inside my house
[ ] In or around the crawl space
[ ] Inside my attached garage
[ ] Inside exterior buildings on my property (e.g., unattached garage, storage shed)
[ ] Outside buildings, but only against exterior walls
[ ] Outside on my property (e.g., in a flower or vegetable garden)
[ ] At the edge of my property
[ ] Beyond the boundary of my property
[ ] I am not sure because they are applied by a professional or yard care company
[ ] Other (*Please specify*) _____

7) How often have rodenticides been applied on your property? (*Please select ONE*)

[ ] More than once per week
[ ] Once per week
[ ] Less than once per week, but more than once per month
[ ] Once per month
[ ] Less than once per month, but more than once per year
[ ] Once per year
[ ] When pests are observed, regardless of how often
[ ] I am not sure because they are applied by a professional or yard care company
[ ] Other (*Please specify*) _____

8) Please describe, in as much detail as possible, how rodenticides have been applied on your property. [EXAMPLE: Open the bait box, pour some bait onto a paper plate and place the plate next to the opened box.]

_____
_____
_____

9) Are the rodenticides stored on your property when not in use? (*Please select ONE*)

[ ] Yes -- *Please go to question 9a*
[ ] No -- *Please go to question 10*
[ ] Unsure -- *Please go to question 10*

9a) Please describe, in as much detail as possible, where rodenticides are stored on your property.

_____

10) How are dead animals (that appear to have been killed by rodenticide) typically disposed of? (*Please select ONE*)

[ ] Put in household trash as-is
[ ] Put in household trash wrapped well in plastic
[ ] Disposed of on property (e.g., buried on property)
[ ] Disposed of near property (e.g., in a field near property)
[ ] Taken to hazardous waste disposal site
[ ] I have not found dead animals
[ ] I am not sure because they are taken care of by a professional or yard care company
[ ] Other (*Please specify*) _____

11) How important are each of the following in the selection of rodenticides that are used on your property? (*Please select ONE response for <u>each</u> statement*) [NOTE: Very important, Somewhat important, Not important will be provided in table format]

Cost
Availability
Appearance of packaging (e.g., picture of animal)
Brand/trade name
Directions indicate use on a particular pest animal
Particular active ingredient
Clarity of instructions for use
Clarity of safety information related to use (e.g., what do to in case of ingestion)
Ease of application
How long it will be effective after application
How long it takes to work
Recommendation from salesperson at place of purchase
Recommendation from someone other than salesperson at place of purchase
Concern about the welfare of the pest animal
Environmental concerns as a result of use
Somebody else (e.g., yard care or professional pest control company) decides which product to use
Other (*Please specify*) _____

The following section asks about who has been responsible controlling pest animals on your property.

12) Who is the PRIMARY person responsible for applying rodent control products? (*Please select ONE*)

[ ] I am the person responsible -- *Please <u>go to question 13</u>*
[ ] Someone else in my household is responsible -- *Please <u>go to question 13</u>*
[ ] Yard care company -- *Please <u>go to question 12a</u>*
[ ] Professional pest control company (e.g., Orkin) -- *Please <u>go to question 12a</u>*
[ ] Other -- *Please <u>go to question 12a</u>* (*Please specify*) _____

12a) Does the person who applies the rodent control products provide you with safety information about the products that are used? (*Please select ONE*)

[ ] Yes
[ ] No

12b) How would you rate the attention to product use directions by the person who applies rodent control methods? (*Please select ONE*)

[ ] They follow directions exactly
[ ] They follow directions somewhat
[ ] They do not follow directions at all
[ ] I cannot determine this based on my experience
[ ] Other (*Please specify*) _____

12c) Do you feel that the person who applies rodent control methods on your property provides you with adequate information regarding the safety of the products for humans, pets, or the environment? (*Please select ONE answer for each*)

	Yes	No	Unsure
Humans?			
Pets?			
Environment?			

12d) Have you looked for information elsewhere about the safety of the products used? (*Please select ONE)*

[ ] Yes -- *Please go to question 14*
[ ] No -- *Please go to question 14*

13) How do you or someone else in your household determine how much rodenticide to apply? (*Please select ONE*)

[ ] Read and follow directions on the package
[ ] Best estimate
[ ] Other (*Please specify*) _____

13a) How would you rate how much you or someone else in your household pay attention to the directions on how to use a particular rodenticide product? (*Please select ONE*)

[ ] I/they follow directions exactly
[ ] I/they follow directions somewhat
[ ] I/they do not follow directions at all
[ ] Other (*Please specify*) _____

13b) How would you rate the ease of following directions on rodenticide products? (*Please select ONE*)

[ ] Very easy
[ ] Somewhat easy
[ ] Unsure
[ ] Somewhat difficult
[ ] Very difficult
[ ] Somebody in my household other than myself applies the rodenticides

13c) Do you feel that the packaging for rodenticide products provides you with adequate information regarding the safety of the product for humans, pets, or the environment? (*Please select ONE answer for each*)

	Yes	No	Unsure
Humans?			
Pets?			
Environment?			

Regardless of whether or not you control for rodents or other animals, or who applies rodent control products, please answer the following questions about safety and environmental issues regarding use of rodenticides.

14) Do you have any reason to think that a member of your household has ever been poisoned by a chemical rodenticide? (*Please select ONE*)

[ ] Yes -- *Please go to question 14a*
[ ] No -- *Please go to question 15*
[ ] Unsure -- *Please go to question 14a*

14a) Please explain the situation. (*Please be as specific as possible*) _____
_____

15) Do you have any reason to think that a household pet has ever been poisoned by a chemical rodenticide? (*Please select ONE*)

[ ] Yes -- *Please go to question 15a*
[ ] No -- *Please go to question 16*
[ ] Unsure -- *Please go to question 15a*

15a) Please explain the situation. (*Please be as specific as possible*) _____
_____

16) For each statement please indicate whether you Strongly Agree, Agree, are Unsure, Disagree or Strongly Disagree. (***Please select ONE response for each statement***) [NOTE: Strongly agree, Agree, Unsure, Disagree, Strongly disagree, will be provided in table format]

I don't like rodents
I am afraid of rodents
I don't want the rodents in my home
I don't want the rodents on my property
I am concerned about the welfare of children as a result of rodent presence
I am concerned about the welfare of pets as a result of rodent presence
I am concerned about the spread of disease by rodents

17) Please indicate whether you agree or disagree with each of the following statements about rodenticides. Rodenticides: (*Please select ONE response for each statement*) [NOTE: Strongly agree, Agree, Unsure, Disagree, Strongly disagree, will be provided in table format]

…Are necessary to combat rodent pests
…Should be available for use by anybody
…Should be available for use only by licensed professionals
…Should be available for use by anybody, but carefully regulated
…Should be available for use by anybody but explicitly labeled with information about possible dangers to humans, pets, and the environment
…Should be available for use if unintended effects on wildlife occur only occasionally
…Should only be available for use only if unintended effects on wildlife can be eliminated
…Should be banned completely

18) How concerned would you say you are about each of the following: (*Please select ONE response for <u>each</u> statement*) [NOTE: Very concerned, Somewhat concerned, Not concerned, Not applicable will be provided in table format]

Chemical rodenticides may be affecting wildlife in your area
Chemical rodenticides may be affecting endangered or threatened wildlife in your area
Your use of chemical rodenticides may be affecting wildlife in your area
Your use of chemical rodenticides may be affecting endangered or threatened wildlife in your area

19) If household chemical rodenticides are affecting wildlife in your area, how likely would you be to do the following? (***Please select ONE response for <u>each</u> statement*)** [NOTE: Very likely, Somewhat likely, Unsure, Somewhat unlikely, Very unlikely, Not applicable will be provided in table format]

Reduce my use of chemical rodenticides
Continue to use the same rodenticide(s) on my property
Change the type of rodenticide(s) that I use

20) In your area, wildlife have shown evidence of possible exposure to chemicals found in common household rodenticides. Were you aware of this before receiving this survey? (*Please select ONE*)

[ ] Yes -- *Please <u>go to question 20a</u>*
[ ] No -- *Please <u>go to question 21</u>*

20a) Where did you receive such information? (*Please be as specific as possible*) _____
_____

Now we would like to know about some of the activities partaken by you or members of your household.

21) Please indicate, on a scale of 1 (never) to 5 (very frequently), how frequently you, or anyone in your household, participate in each of the following activities (*Please select ONE response for <u>each</u> statement*) [NOTE: A scale of 1 to 5 will be provided in table format; 1 = never, 3 = sometimes, 5 = very frequently]

Running or walking
Biking
Hiking
Fishing
Hunting (big or small game)
Camping (tent/trailer/RV)
Snow skiing
Riding all-terrain vehicles or snowmobiles
Motorboating, jetskiing or waterskiing
Riding horses/mules
Golfing
Gardening or doing yard work
Observing or studying wildlife outdoors
Learning about nature/wildlife
Bird watching
Watching wildlife-related TV/movies

22) Please indicate, on a scale of 1 (never) to 5 (very frequently), how frequently you or anyone in your household participate in each of the following activities. (*Please select ONE response for <u>each</u> statement*)
[NOTE: A scale of 1 to 5 will be provided in table format; 1 = never, 3 = sometimes, 5 = very frequently]

Recycling household waste
Using public transportation
Purchasing products made from recycled materials
Purchasing organic food
Visiting national parks
Visiting public lands other than national parks
Purchasing energy-efficient home appliances
Donating money to environmental organizations
Donating time to assist environmental organizations
Taking the time to learn about environmental issues
Participate in any kind of volunteer community service
Voting for political candidates because they support environmental protection
Voting for political candidates because they oppose to environmental protection

23) People choose to live in their particular neighborhoods for different reasons. For each of the following reasons, please indicate how important it is as a factor in deciding where to live. (*Please select ONE response for <u>each</u> statement*) [NOTE: Very important, Somewhat important, Not important, Not applicable will be provided in table format]

Closeness to work
Closeness to family/friends
Closeness to particular services (e.g., favorite restaurant)
Closeness to public land(s)
Closeness to natural features (e.g., ocean, mountains)
Closeness to parks/playgrounds
The ability to observe local wildlife
Affordability of housing
Good school district
Nice community atmosphere
Other (*Please specify*) _____

In order for us to better understand peoples' responses to the previous questions, we need to know a few things about your background. Please remember, your responses are private and your our identifying information will not be directly linked to your responses in any way.

24) How many individuals live in your household? ____

25) How many individuals in your household are less than 18 years old? ____

26) Do you have any pets? (*Please select ONE*)

[ ] Yes -- *Please <u>go to question 26a</u>*
[ ] No -- *Please <u>go to question 27</u>*

26a) Do your pet(s) regularly spend time outside without human supervision? (*Please select ONE*)

[ ] Yes
[ ] No

26b) Do you typically leave food outside for your pet(s)? (*Please select ONE*)

[ ] Yes
[ ] No

27) Approximately how long have you lived at your current address? _____ years

28) Do you rent or own your home? (*Please select ONE*)

[ ] Rent
[ ] Own

29) Are you male or female?

[ ] Male
[ ] Female

30) In what year were you born? 19_____

31) What is the highest level of formal education that you have completed? (*Please select ONE*)

[ ] Less than high school
[ ] High school graduate or equivalent (e.g., GED)
[ ] Vocational or trade school
[ ] Some college
[ ] Associate's degree (2 year degree)
[ ] College graduate (Bachelor's or 4 year degree)
[ ] Graduate or professional degree

32) Are you Hispanic or Latino?

[ ] Yes
[ ] No

33) What is your race? (*Please choose one or more*)

[ ] White
[ ] Black or African American
[ ] Asian
[ ] American Indian or Alaska Native
[ ] Native Hawaiian or Other Pacific Islander

34) What was your gross household income (before taxes) in 2006? (*Please select ONE*)

[ ] Less than $25,000
[ ] $25,000 to $49,999
[ ] $50,000 to $74,999
[ ] $75,000 to $99,999
[ ] $100,000 to $124,999
[ ] $125,000 to $149,999
[ ] $150,000 to $174,999
[ ] $175,000 to $199,999
[ ] More than $199,999

35) Are you interested in receiving a summary of survey results? (*Please select ONE*)

[ ] Yes
[ ] No

THANK YOU FOR YOUR TIME AND ASSISTANCE!!

Please use the enclosed addressed and stamped envelope or return this survey to:

Anita Morzillo, Project Manager
US EPA
200 SW 35th St.
Corvallis, OR 97333

Residential and Commercial Awareness and Use of Rodenticides in Southern California Urban Ecosystems

B. HOUSEHOLD SERVICE VERSION

The annual public reporting and recordkeeping burden for this collection of information is estimated to average 0.33 hours (20 minutes) per response. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements which have subsequently changed; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

This survey is about rodents and rodenticides. Rodents include animals such as mice, rats, and gophers. Rodenticides are materials used to control rodents. For this survey, please consider any actions that have been taken on your property to control rodents within approximately the past 5 years.

The household service survey will consist of the following questions from the household survey:

1, 1a, 2, 3, 4, 5, 5a-e, 6, 7, 8, 9, 9a, 10, 11, 12, 12a-d, 13, 13a-c, 14, 14a, 16, 17, 18, 19, 20, 20a, and 34.

Where appropriate (i.e., 5d-e, 6, 10, 12, 13, 13a, 14), the word "house" or "household" will be replaced by "place of business." The word "household" will be removed from question #19.

The following additional questions, that do not appear on the household survey, will be included on the household service survey:

Where is trash kept at your place of business until it is picked up by a trash collection company? (*Please select ONE*)

[ ] Inside the building, within plastic bags inside and piled on the floor
[ ] Inside the building, within plastic bags that are placed in a large container or bin
[ ] Outside the building, within plastic bags and piled on the ground
[ ] Outside the building, within plastic bags that are placed in a large container or bin
[ ] Outside the building, within plastic bags that are placed in an on-site dumpster
[ ] Other (*Please specify*) _____

Please describe your business type: (*Please be as specific as possible*) _____
(*Examples: restaurant, grocery, coffee shop, pharmacy, golf course*)

Part IV: Reminder Postcard

The **Front** side will include the EPA logo and return address, along with the recipient's address.

Back side:

XX February 2007

Recently you were mailed a questionnaire from the US Environmental Protection Agency, in cooperation with the National Park Service and California State University, Stanislaus seeking information about rodent pest control.

If you have already completed and returned the survey, please accept our sincere thanks! If not, please do so today. Because of the small number of people contacted, it is very important that we receive your feedback.

If you did not receive the questionnaire, or it got misplaced, please call me **toll free at XXXXXXX** and we will get another questionnaire in the mail to you. Thank you for your participation!

Sincerely,

Anita Morzillo
Project Manager

Residential and Commercial Awareness and Use of Rodenticides in Southern California Urban Ecosystems

Part V: Second Survey Mailing – Cover letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL HEALTH AND ENVIRONMENTAL EFFECTS
RESEARCH LABORATORY
WESTERN ECOLOGY DIVISION
200 S.W. 35TH STREET, CORVALLIS, OR. 97333

OFFICE OF
RESEARCH AND DEVELOPMENT

XX February 2007

«address»
«city», «state» «zip»-«four»

Dear Resident:

A few weeks ago we sent you a questionnaire asking for information about rodent pest control. We have not yet received your response. If this letter and your completed survey have crossed in the mail, please disregard this letter and accept our sincere thanks for your participation in this study!

The comments of people who have already responded show that rodent pest control among California residents is very diverse. We know the results are going to be very useful to natural resource managers and researchers.

We are writing again because of the importance that your questionnaire has for assuring that study results are accurate. Although we sent questionnaires to other people in your area, it is only by hearing from nearly everyone to whom surveys are mailed that we can be sure that the results are truly representative. If you have not had a chance to fill out the survey questionnaire, we would appreciate your prompt attention.

Some people have told us that they have no interest in or limited knowledge about rodent pest control and they feel that their response is therefore not important. We want you to know that everyone's opinion is important for this survey. A few people have written to say that they should not have received the questionnaire because they are not a resident of California or they are not at least 18 years of age. If either of these concerns applies to you, please give the survey to a person in your household who meets these criteria. If no one in your household is eligible, please indicate this on the survey and send it back to us. By doing so, we can remove you from our mailing list.

Your address will not be associated with your responses in any way and your privacy will be protected to the maximum extent allowable by law. Your response to the survey and any of its questions is completely voluntary. The survey should only take about 20 minutes to complete. After you are finished completing the questionnaire, please seal it, and drop it in any mailbox (no envelope is needed). Return postage has been provided.

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If you have any questions about this project, please feel free to call me **toll free at XXXXXXX**. If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact Richard Hermann, Director, Human Research Protocol Office, US EPA, National Health and Environmental Effects Research Laboratory, by phone: (919) 966-6217, fax: (919) 966-6212, e-mail: hermann.richard@epa.gov, or regular mail: MD 58A, Research Triangle Park, NC 27711.

Sincerely,

Anita Morzillo
Project Manager

Residential and Commercial Awareness and Use of Rodenticides in Southern California Urban Ecosystems

Part VI: Non-response follow-up questionnaire (example questions; approximately 10-15 questions ultimately will be selected and based on responses to the original survey)

Recently you were mailed a questionnaire seeking information from you about rodent pest control. Since our response rate to this survey was lower than we had hoped, we would like to ask you a few questions so we can understand the reasons for this non-response.

We are not asking you to fill out anything like the survey we sent you previously. The attached follow-up survey should take no more than 5 minutes to complete. We would sincerely appreciate your time because this information will provide valuable information for our study. Please consider any actions that have been taken on your property to control rodents within approximately the past 5 years.

As before, your response is voluntary, but we would not be asking you for this information if we did not consider it important. Your information will be kept private and your identifying information will never be linked to your responses.

Your cooperation is greatly appreciated. Thank you for taking the time to assist us with this study.

Have you or anyone else tried to control rodents or other animals on your property? (*Please select ONE*)

[ ] Yes
[ ] No -- *will be directed to skip questions pertaining to rodenticide use*
[ ] Unsure -- *will be directed to skip questions pertaining to rodenticide use*

Which of the following types of animals have you or someone else been trying to control on your property? (*Please select all that apply*)

[ ] Mice
[ ] Rats
[ ] Squirrels
[ ] Gopher
[ ] Woodrat
[ ] Other animals (*Please specify*) _____

Have any of the following rodent control methods been used on your property (e.g., snap traps, glue boards)? (*Please select all that apply*)

[ ] Physical control methods (e.g., snap traps, glue boards)
[ ] Chemical control methods (*Please name*) _____

How are the following disposed of?

Packaging _____
Unused bait _____
I am not sure because it is disposed of by a professional or yard care company (*Select here if applicable*) [ ]

Where are rodent control products applied on your property? (*Please select all that apply*)

[ ] Inside only
[ ] Both inside and outside
[ ] Outside only

What is the most important reason for choosing a rodenticide for use? (*Examples: cost, picture of animal on package, how long it takes to work*) _____

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Who applies rodent control products on your property?

[ ] I am the person responsible
[ ] Someone else in my household is responsible
[ ] Yard care company
[ ] Professional pest control company (e.g., Orkin)
[ ] Other (*Please specify*) _____

How do you or someone else in your household determine how much rodenticide to apply? (*Please select ONE*)

[ ] Read and follow directions on the package
[ ] Best estimate
[ ] Other (*Please specify*) _____

Do you have any reason to think that a member of your household or pet has ever been poisoned by a chemical rodenticide? (*Please select ONE response for <u>each</u>*)

Member of household: [ ] Yes [ ] No [ ] Unsure
Pet: [ ] Yes [ ] No [ ] Unsure

Which of the following statements are TRUE? (*Please select <u>all</u> that apply*)

[ ] I don't like rodents
[ ] I am afraid of rodents
[ ] I don't want the rodents in my home
[ ] I don't want the rodents on my property
[ ] I am concerned about the welfare of children as a result of rodent presence
[ ] I am concerned about the welfare of pets as a result of rodent presence
[ ] I am concerned about the spread of disease by rodents

In your area, wildlife have shown evidence of possible exposure to chemicals found in common household rodenticides. Were you aware of this before receiving this survey? (*Please select ONE*)

[ ] Yes
[ ] No

Do you, or anyone in your household, frequently participate in outdoor activities? (*Please select ONE*)

[ ] Yes
[ ] No

What is the most important reason, to you, why you live where you do? (*Examples: cost, closeness to work, closeness to family*) _____

Do you?: [ ] Rent [ ] Own

Are you?: [ ] Male [ ] Female

In what year were you born? 19_____

Have you completed a 4-year college degree? [ ] Yes [ ] No

Was your household income (before taxes) in 2006 more than $50,000? [ ] Yes [ ] No

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Follow-up survey for household services will be based on responses to original survey by household services. Rather than demographic questions, the following questions (or modifications thereof) will be included:

Where is trash kept at your place of business until it is picked up by a trash collection company? (*Please select ONE*)

[ ] Inside the building, within plastic bags inside and piled on the floor
[ ] Inside the building, within plastic bags that are placed in a large container or bin
[ ] Outside the building, within plastic bags and piled on the ground
[ ] Outside the building, within plastic bags that are placed in a large container or bin
[ ] Outside the building, within plastic bags that are placed in an on-site dumpster
[ ] Other (*Please specify*) _____

Please describe your business type: (*Please be as specific as possible*) _____
(*Examples: restaurant, grocery, coffee shop, pharmacy, golf course*)

APPENDIX B: Statistical Power and Precision

Based on the planned statistical analyses at the $\alpha = 0.05$ level of significance, results from this study will have a ≥80% probability (statistical power) to detect a 10% difference in the demographic variables relative to baseline census data. For the household survey, a sample size of 618 respondents will be adequate to achieve an 80% statistical power for all questions in the questionnaire.

For the household service (business) survey, the sample size is limited by the number of businesses located within each study area. There are approximately 750 businesses within the study area for Bakersfield and 890 businesses for SMMNRA. Questionnaires will be sent to all businesses within each study area. If a 50% response rate is assumed and tests are performed using an $\alpha = 0.05$ significance level, statistical power is expected to be a 61% probability to detect a 10% difference in the response variables for Bakersfield and 68% for SMMNRA. Comparatively, if a 50% response rate is assumed and tests are performed using an $\alpha = 0.05$ significance level, statistical power will have a ≥80% probability to detect a 20% difference in the response variables for both Bakersfield and SMMNRA.

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APPENDIX C: Responses to comments received from Federal Register Notices

Responses are indicated in **Bold** type

1) Response to comments from B. Sachau

you plan a survey of a small area of california to see if people recognize what their household activity does to wildlife. that is such a strange project for an agency that releases thousands of toxic chemical pesticides that are being sprayed and used by those same households - where do you get off asking people to watch what they use WHEN YOUR AGENCY HAS ALLOWED THOSE TOXIC CHEMICALS TO BE AVAILABLE FOR USE? GET OFF IT, EPA. AND STOP AUTHORIZING THE USE OF THESE TOXIC PESTICIDES. YOU ARE THE PROBLEM HERE, NOT THE PEOPLE. DONT ALLOW IT TO BE SOLD IN THE FIRST PLACE. STOP CATERING TO TOXIC CHEMICAL INDUSTRIES, THAT YOU ARE SO PALSY WITH. THIS SURVEY IS A WASTE OF TAX DOLLARS. CLEAN UP YOUR OWN ACT FIRST.

This study will provide valuable information to the Agency regarding the public's attitude towards use of pesticides. Such information will be useful when preparing labels on pesticides that direct the public on how to use registered products in a manner that presents the least risk to human health and the environment. Under the Agency's enabling legislation (FIFRA), the Agency is required to balance the risks and benefits of the use of such products when deciding when and how to register them. The results of this study will support the socioeconomic aspects of pesticide registration decisions, appropriate labeling, and post registration product management. This study is focused on rodenticides because it provides an opportunity to evaluate a case study in which the possibility exists that inadvertent effect on wildlife may take place as a result of a specific human activity.

2) Response to comments from Charlton Research Company

Page 2:

The down side is that mail surveys have a very low response rate. Even in the best-case scenario, mail surveys can yield less than a 10% return rate. Mail surveys also are more time consuming than a telephone interview approach, and responses are often skewed toward respondents with more time or more interest in the subject matter. Finally, because the mail survey does not allow the surveyor to choose respondents at random, the results cannot be considered truly representative of the total population.

Although a low response rate is a common concern with mail surveys, the EPA has selected a sample size based on an assumed response rate of at least 50% (typical for mail surveys; see part B.4.) that will allow for statistical integrity of the data. Sample size will be adjusted conservatively based on the assumed response rate. Mail surveys are less labor intensive than telephone surveys, and less invasive in that this method allows respondents to complete the survey at a time convenient for them. The sample will involve a random selection of subjects, which is built into the sampling design. Applying weights to descriptive statistics will allow for representation of each of the study areas, only.

Because of the low response rate of a mail survey—and the number of surveys that would be needed to get an adequate response rate—it would be difficult to use this methodology effectively nationwide and receive a large enough sample to be representative of the entire country.
It is important to note that results *will not be generalized to the whole US population*; to do this would be absolutely inappropriate from a scientific standpoint.

The questionnaire asks awareness and attitudinal questions surrounding rodenticide, as well as usage and behavioral questions so the analysis can explore direct behaviors in using these products. A big liability with such questions is that they only allow for self-reporting of such behavior which can be inaccurate, especially if the behaviors took place a long time ago.
With all surveys, there is the possibility that inaccurate responses will be reported. By assuring the respondent of privacy of results to the best of our ability, the researchers seek to establish a measure of "good faith" that responses will be truthful. In this study, there will be no acquisition of subject names, which will add a layer of anonymity between the respondents and their responses. Within the supporting statement, the EPA has described how responses will be separated immediately with any identifying information (i.e., addresses), and that only the project manager will have access to this information, and only to keep track of survey mailings and returned surveys.

In addition, there is no data available on a national level surrounding rodents—both pests and pets—and their interactions with the public from which to compare the results of this study. The study also does not touch upon people's general attitudes toward rodents. Many people have great fears toward rodents and will not trap or dispose of them. Their attitudes should be explored in the survey.
We acknowledge that there are no data available on a national level surrounding rodents. Question #4 (now #16) seeks to gain insight toward attitudes toward rodents and health issues surrounding them. Further details of psychological relationships between humans and rodents would better be served via a separate research project.

There is also little in the survey to explore the health issues surrounding rodents. For instance, the following types of questions should be considered:

1 • What kinds of problems to rodents cause to the public?
2 • Why are people targeting rodents?
3 • Do people believe there are health problems (such as disease transmission, flea and tick infestations and rodent bites) associated with rodent pests?
4 • Do some people hold severe fears toward rodents that cause health-related problems such as loss of sleep or extreme stress?
5 • In light of these potential health problems and possible unwanted animal interactions, should people protect themselves from these pests?

Question #4 (now #16) also tackles most of these questions also. By coupling responses to this question with those from question #2 (target species), we can determine attitudes toward the specific targets for rodenticide use. However, the details of social psychological relationships between humans and rodents (mechanisms that cause fear), although an

interesting question, would be better assessed in a separate research project. Question #16 will capture general reasons for concern about rodent presence.

Page 3:
The category of squirrels may also be too big of a category for proper analysis. California has several varieties of squirrels, including ground and tree squirrels, which respondents may view and treat differently. Feral cats also cause a great deal of problems in these areas and may need to be included in the survey.
We have given the respondent the option of "other animals" for this question. This would be the appropriate place for respondents to indicate feral cats or any other species that were not included within the forced choices.

In addition, an order-effect problem exists in questions 7, 8, 9 and 10. Respondents in question 7 are given a list of active ingredients for rodenticides, then asked if they know which active ingredient is in their brand of rodenticide. This will not allow for the survey to tell whether respondents truly know the ingredients in their rodenticide. A better order would be question 9, 10, 7 then 8.
We have re-ordered the questions focusing on the active ingredient to eliminate the possible ordering effect.

Finally the questionnaire does include many demographic questions, however, several others should be considered. Most importantly, the survey should explore the type of property where respondents live, including:

1 • Whether respondents rent or own
2 • Whether respondents live in an attached or unattached, single-family or multiple unit dwelling
3 • The size of the property and lot
4 • Whether respondents live in a rural, urban or suburban setting

The survey also does not ask the demographic questions of having children in the household under the age of 5 or marital status. These other demographic categories may reveal a great deal about rodenticide use in the dwelling.
We have added a question asking whether respondents rent or own, as this was a great suggestion. Information about dwelling type, property lot size, and residential setting will be obtained from publicly available sources. We included a question about whether there are children in the household, and believe that this will be sufficient to determine if residence of children is a significant variable.

3) Response to comments from the Rodenticide Registrants Task Force (RRTF)
Page 1:
It is important for OMB to note that the information to be collected by EPA through this ICR will not only be disseminated at scientific conferences but "may be used by EPA's Office of Pollution, Prevention, and Toxics to evaluate ecological risks of pesticides and efficacy of product labeling."[3]

ORD has been communicating with the Office of Pesticide Programs in regard to this study. The researchers are aware of general pesticide use information that has been collected by California's Department of Pesticide Regulation, and resulting reports from consumer surveys. There is no relationship between this study and current labeling discussions within EPA's Office of Pesticide Programs. This research is not directed towards revising specific labels. Rather, the goal is to increase the Agency's understanding of people's environmental awareness of pesticide risk for use in future assessments.

Page 2:
The RRTF offered to work with EPA in assessing its information needs, including rodenticide labeling issues, and noted that a wealth of information has been developed over the years through EPA's Consumer Labeling Initiative, information that could be brought to bear in addressing EPA's research needs related to rodenticide usage.
Although the information mentioned above is informative, it is not relevant to this study as this research is not related to current labeling discussions. Locations for information collection for this study are based on animal movement data as available by local biologists. It is essential that rodenticide use data corresponds to the locations identified by animal movement data.

Although EPA stated that it "will consider the comments received and amend the ICR as appropriate," EPA utterly failed to do so. In fact, EPA did not make a single alteration to the mail questionnaire suggested by the RRTF. Even modest changes, such as reordering some of the questions in the questionnaire, were inexplicably ignored by EPA. Instead, EPA offered the following four sentence "response" to the "1" public comment received during the comment period…..*continuing onto Page 3*:
The RRTF submitted comments as related to the first Federal Register Notice, which were posted to the Federal Register on 25 September 2006. As a result of a miscommunication within the EPA related to timing of the posting, only one comment was viewed by researchers as related to the first notice upon commencement of the first comment period (viewed on 23 September). We apologize for this as it was unintended. Because the EPA seeks to construct a fair and unbiased survey, the agency has reviewed the RRTF's comments from both comment periods, has incorporated applicable suggestions from both comment periods into the questionnaire, and addresses all comments here (other than this particular concern, comments submitted by the RRTF about the research project the same for both comment periods).

Page 4:
Despite the stated interest in "household activities," the questionnaire is focused almost exclusively on household use of *rodenticides*. Furthermore, it is neither clear how many household service providers are included in the sample size of 10,000, nor why EPA is including them if the focus is on "household activities."
Per suggestions by both RRTF and OMB, we have expanded the title to be more conclusive of both households and household service providers.

It is difficult to see how the questionnaire's form, content, and method of obtaining information could conceivably lead either to "more effective and appropriately targeted environmental regulation"[12] or an evaluation of "ecological risks of pesticides and efficacy of product labeling,"[13] particularly when the study population is not representative of U.S. households….*continued on Page 5.*….. As discussed in the accompanying comments by Charlton Research Company,[16] however, a mail questionnaire is not the appropriate means by which to obtain results representative of U.S. households.

This research is not directed towards revising specific labels nor will it be used by the Agency for risk assessment. It is important to note that results from this study will not be generalized to all US households. Within the study design, it is stated explicitly that appropriate statistical methodology will be used to generalize the results to the study areas, but not beyond them. Generalizing results to the entire US would be inappropriate, as RRTF clearly identified.

Mail surveys also are skewed toward respondents who may have more time to complete the questionnaire or have more of an interest in the subject matter.

There are advantages and disadvantages to every survey method. Mail surveys are less labor intensive than telephone surveys (and as a result less costly), and less invasive in that the mail method allows respondents to complete the survey at a time convenient for them. Because southern California contains large Hispanic and Latino populations a mail survey will also allow researchers to accommodate the needs of participants who speak only Spanish. To do this by telephone would require a larger number of interviewers with advanced bilingual skills, and extra training to ensure that surveys are implemented appropriately in both languages.

Thus, EPA appears to base this question on the unsupportable assumption that any household use of rodenticides, even by licensed pesticide applicators, causes rodenticides to "move into the environment," resulting in wildlife exposures. Moreover, the meaning of "moving into the environment" is fraught with uncertainty and thus subject to multiple interpretations, as are the distinctions between "local environment" and "local wildlife."

The EPA seeks to focus this study on household rodenticides because symptoms of consumption of these products have been observed in local wildlife (see citations in the Abstract section of this document). We acknowledge commercial use of these products, but our focus for this particular study is on households. It is important to note that the EPA cannot explicitly determine through this study that wildlife mortality is occurring directly as a result of use of these products, as directly related to households or any other users, and it is not the intention of this study to evaluate risk. To minimize ambiguity, we have removed references to "moving into the environment."

Page 6:

Questions 28 and 29 further muddy the water. Question 28 asks, "Would your answers to question 27 be different if local wildlife are [sic] listed as a threatened or endangered animal under the Endangered Species Act?"[20] Should respondents assume that their "activities" affect threatened and endangered species, and as a result of all household "activities" or just use of "chemical rodenticides?" If "chemical rodenticides," any use or just misuse?

We have completely overhauled these questions (now #17-20) to eliminate the suggested ambiguities and changed the order to eliminate a possible ordering effect as a result of Question #20.

Similarly, Question 29 attempts to assess the likelihood that respondents will change their "activities," including deselecting rodenticides, in order to decrease their potential impact on the local environment and local wildlife.[21] Again, this assumes that the respondents' activities (whatever they may be) are impacting the environment or local wildlife, a conclusion that is woefully unsupported.

This question has been edited to be more specific (now #19). We do not assume that residential activities are impacting the environment or wildlife, and acknowledge that making such an assumption would be irresponsible.

In sum, the RRTF fails to see how the questionnaire will assist EPA in developing "better methods to limit product impact on animals other than those targeted by a particular rodenticide product."[22]

This survey is meant only to determine participant awareness or concern of how pesticide use might inadvertently affect the environment. It is not the intention of the EPA to change participant behavior, nor is this study part of any ecological risk assessment as related to pesticide products. There is no relationship between this study and discussions within EPA's Office of Pesticide Programs on pesticide labeling.

Page 6 continuing on to Page 7:

Question 5(a) asks "Does the person provide you with information about the rodenticide products that are used and how often?"[24] It is unclear, however, what the word "information" is referring to. Question 5(b) asks "How would you rate the attention to rodenticide product use directions by the person who applies rodenticides on your property?"[25] But how is the respondent to make this determination? Question 5(c) asks "Do you feel that you are adequately advised of possible dangers to humans, pets, and the environment that result from rodenticide use?"[26] What does the word "dangers" refer to? If the respondent answers "no," what does that mean? Moreover, it is unclear whether Question 5(c) is meant to assess the adequacy of the label itself or the verbal and/or written information provided by the professional applicator. A more useful question would explore *where* consumers obtain information on rodenticides.

We agree with the comment about ambiguity and potential for bias with question #5 (now #12), and have adjusted the language of *all* parts of this question appropriately and as suggested to be more specific.

Page 7:

Question 10 asks "Do you know how the active ingredient works (*e.g*., anticoagulant; prevents blood from clotting)?"[27] Assuming the respondent is knowledgeable about the sophisticated term of art, "active ingredient," it is unclear what the point of this question is, particularly when the question supplies the answer, at least with regard to anticoagulants.

In regard to question #10 (now #5b), we do not (and cannot) assume that the respondent is knowledgeable about how a product works. By asking whether respondents know the active ingredient, we can use this knowledge rather than make an assumption. Coupling

this response with that of question #17 (now #11), we seek to determine what factors might influence an individual in using a particular product, and we hypothesize that specific reasons for use of a particular product might override individual evaluation of the product in detail (e.g., if an individual can only afford particular products, active agent might be irrelevant).

Question 15 asks the respondent to describe "exactly how rodenticides are applied on your property. (Bolded:) "*For example, if you use a chemical bait product and you open the bait box, pour some bait onto a paper plate or other surface next to where you place the box, please say that. Or you may sprinkle/spread bait on the ground."*[28] The bolded text (added here for emphasis) could bias the respondent into providing the suggested response even if it is not reflective of how the homeowner or professional applicator is applying the product.
The bolded text for question #15 (now #8) is only to provide an example as part of the question (all questions are in bold type). By providing an example, we are providing the respondent with specifics of the information that we seek to collect. With all surveys, there is the possibility that inaccurate responses will be reported. By assuring the participants that privacy of results to the best of our ability, the researchers seek to establish a measure of "good faith" that responses will be truthful.

Question 19 asks "How are dead animals disposed?"[29] Presumably the question is attempting to determine how homeowners dispose of dead animals eradicated by rodenticides, but not all "dead animals" disposed of by households or household service providers are the result of exposure to rodenticides. It is not possible to readily determine whether an animal (either a target or non-target species) has been impacted by a chemical rodenticide. Additionally, the question fails to ascertain the type of "dead animals" disposed of, information that would be helpful in determining whether rodenticides are in fact impacting "local wildlife."
We have modified this question (now #10) to read "How are dead animals (that appear to have been killed by rodenticide) typically disposed of?" which should minimize the suggested ambiguity.

Page 7 continuing on to Page 8:
The only non-monetary incentive that will be used, however, is a #2 pencil, a remarkably small token unlikely to yield a satisfactory response rate even when coupled with multiple survey mailings.[31]
Because the survey will be sent via first class mail, the EPA has removed the #2 pencil because of concerns over whether this will cause problems in automatic parts of the mailing process.

EPA estimates that "each respondent will spend 20 minutes or less completing the questionnaire. This includes the time for reviewing the informed consent form and the instructions, filling out the questionnaire, and returning the questionnaire."[32] In light of the fact that the questionnaire is composed of over 40 questions -- many of which are confusing and not readily answerable -- the RRTF believes it is highly unrealistic to expect that respondents can complete the questionnaire in so short a period of time.

The EPA has estimated that each question should take no more than 30 seconds to complete. With 35 questions total, respondents should be able to complete the questionnaire in less than 20 minutes time, on average.

4) Response to comments from Reckitt Benckiser

Page 2:

The researchers have indicated that they are attempting to better understand "how people relate to their personal impacts on the environment" in the context of household use of rodenticides products. The study will "result in more effective and appropriately targeted environmental regulation." *Id*. However, it is not clear how the information being collected will help EPA to address the environmental impacts of household rodenticide use because the study is designed in such a way that the information gathered will not be useful to forming viable and scientifically-defensible conclusions.

This is a specific case study (example) to study attitudes that people have toward the environment, how aware they are about how individual actions might inadvertently affect environmental components, and what kinds of problems might be expected as related to continuing expansion of the urban-wildland interface and environmental stewardship. Selection of this particular system and the focus of rodenticides for study is incidental.

The researchers intend to randomly survey 10,000 households and service providers.[1]

We have made the appropriate edits to include "household services" in both the title of the document and within the text.

The use of such surveys to obtain information on how consumers use a specific product type is inappropriate. To be effective, such consumer research must be conducted using subjects who have been identified as actual users of the product type in order to get information that will have some level of relevancy; otherwise, respondents will not be providing information that is based upon personal knowledge or experience with particular products.

We seek to acquire information about both rodenticide use and lack of use to allow for more complete picture about product use in connection with environmental attitudes and decision-making by individuals. Such information will allow for the understanding of any relationships as to whether awareness of non-target effects may result in non-use or a consumer's decision to purchase (or not purchase) a particular product. In addition, we seek to comparatively determine between users the amount of knowledge that individual users have about the products that they purchase.

While it seems the first question of the proposed survey may be an attempt to identify non-users of rodenticides products, the question only serves to direct the respondent to other questions that either have no relevance to the original purpose of the study (questions 24 & 25) or for which the non-user consumer may feel compelled to answer in a certain fashion because of the leading way in which the questions have been written (e.g., questions 26 through 30).[2]

[1] The inclusion of service providers among the users of rodenticides in this research is inconsistent with the Agency's stated area of interest, the household user.

By asking these questions to both users and non-users, such information will allow for the understanding of any relationships as to whether awareness of non-target effects may result in non-use or a consumer's decision to purchase (or not purchase) a particular product.

Page 3:
Numerous questions in the draft ICR reflect an underlying bias against household use of rodenticides generally, and products using an anticoagulant as an active ingredient particularly. For example, rather than *asking* respondents whether they are aware of exposures of wildlife to household rodenticides having occurred in the area, question 26 *tells* the reader that there is "evidence" that such exposure has occurred.
We have reordered these questions so that the wildlife question is now #20, and the *last* question that is asked about rodenticides.

Thus, if exposures to wildlife have occurred, it does not necessarily follow that this is due to household uses. It is important to note that numerous rodenticide products which are registered for use in California for *non-residential uses* contain the same active ingredients as household use products. It is also likely that wildlife may be exposed through intentional product misuse.
We acknowledge this and agree.

Further, to avoid bias, the survey should be active ingredient neutral. There is no need for individual questions to require a household user to be able to identify correctly the mode of activity of any particular active ingredient. The name of a particular active ingredient and its mode of activity is irrelevant if the survey is attempting to gather information on the entire spectrum of household use rodenticide products and consumer habits regarding their use generally. The survey's focus on anticoagulant products might imply to the person filling out the survey that there is a concern about one set of active ingredients but not another. Therefore, we recommend that if the survey is conducted, that all questions such as question number seven be stricken from the survey, if the question asks consumers for the mode of action of the active ingredient or the name of a particular active ingredient. (If the respondent no longer has a container of the product they have used, it is unlikely they will be capable of replying to this question; further, some company's market a variety of products containing various active ingredients but under one brand name.)
We have revised the focus of this survey to make the active ingredient questions more general without the anticoagulant focus. Instead, we seek for respondents to provide specific information to us about particular products that are used on their property.

Question eight is somewhat more appropriate for a consumer as it asks the respondent to identify the brand names of the product(s) with which they have some experience. Even then, it is unclear how this information will help the Agency form any conclusions about a connection between household users' attitudes and a potential link between household rodenticide use and impacts upon the environment.

[2] Thus, question 27 commences with this statement: "Knowing that household chemical rodenticides are moving into the environment, would you say that: my concern about how my activities affect the local environment has ….".

Information about types of products used will allow the researchers to establish potential relationships between awareness of non-target effects and decision to purchase (or not purchase) a particular product. We also seek information about whether respondents who use particular products are knowledgeable about the products that they choose to use themselves, or are placed on their property by a hired company.

The bias of the survey is betrayed by the statement which appears at the very front of the questionnaire that "Sometimes other wild animals, both common and rarely seen, are unintentionally affected by rodenticides, particularly chemical rodenticides"[3] Providing this conclusory statement at the beginning of the survey is undoubtedly likely to inadvertently skew responses in the survey. This statement implies that any type of product use may result in wildlife exposure and it establishes a negative tone to the survey that undoubtedly is likely to influence the way respondents answer questions later in the survey.
The researchers agree that the introductory paragraph of the survey may result in possible respondent bias. This "conclusory statement" at the beginning of the survey has been removed.

Page 4:
The EPA estimates that each respondent will spend approximately 20 minutes completing the survey. This is a very gross underestimate as the survey itself has more than 40 questions and covers a topic that might be difficult and time consuming for some responders. We think it is unlikely that the general population will be able to accurately and carefully complete questions concerning the chemical contents of rodenticide products, their mode of action on rodents, and the specifics of their label instructions within fewer than 30 seconds per question.
The EPA has estimated that each question should take no more than 30 seconds to complete. With 35 questions total, respondents should be able to complete the questionnaire, on average, in less than 20 minutes time.

[3] *See* pg. 18, Part III, Questionnaire

EPA currently is finalizing a multi-year re-evaluation of the potential risks and benefits of rodenticide products (including a review of data concerning unintended affects on non-target species). To complete this re-evaluation, EPA received the input of multiple stakeholders (including input from several of the consultants to the proposed ICR). The re-evaluation OPP is expected to announce certain risk mitigation proposals by the end of 2006. EPA's re-evaluation could result in significant changes to the various uses and authorized labels of consumer use rodenticides. This action from OPP will precede the results and analysis of the survey being undertaken by ORD. (The data sets from the ORD study are not expected to be completed until September 2007.) Thus, the proposed collection of information by ORD will no longer be timely to EPA decision making. This reflects an inefficient and unnecessary use of EPA and taxpayer resources. Furthermore, it has been widely reported in the media that the Agency is seeking to "down size" its laboratory staff. *See* 9/14/06 *Bureau of National Affairs* Daily Environment Reporter. The use of scarce laboratory and research resources on a survey of this manner is inappropriate. Any data, analysis or recommendations that may arise from the ORD research will not only be un-timely to risk-management decision making it will be based on patterns of use and labeling that very likely could change in the near term. Based on this, the review of the ORD data and development of any conclusions cannot reasonably be expected until the end of 2007 -- well beyond the time final measures are adopted.). California's Department of Pesticide Regulation also is in the process of evaluating consumer use rodenticides use and is expected to work with EPA and registrants to expeditiously implement labeling and use pattern improvements.

ORD has been communicating with the Office of Pesticide Programs in regard to the timing of this study. The researchers are aware of general pesticide use information that has been collected by California's Department of Pesticide Regulation, and resulting reports from consumer surveys. There is no relationship between this study and current labeling discussions within EPA's Office of Pesticide Programs. This research is not directed towards revising specific labels. Rather, the goal is to increase understanding of people's environmental awareness of pesticide risk for use in future assessments.

5) Response to comments from Syngenta, Bell Laboratories, and Hacco, Inc.

The same form letter was used by all three companies. HACCO's letter is used here to address comments.

EPA has failed to comport with either OMB's regulations or its *Guidance on Agency Survey and Statistical Information Collections*. In particular, EPA failed to consider comments by the RRTF and several of its members, including HACCO that were submitted to EPA in response to the initial July 24, 2006, *Federal Register* notice on the proposed ICR. Even modest changes to the survey were ignored. Moreover, it is mystifying how EPA could have concluded that only "1" comment was received during the public comment period when the e-docket clearly indicates that five public comments were received.

Syngenta, Bell, and HACCO submitted similar letters following the first Federal Register Notice, which were posted to the Federal Register on 25 September 2006. As stated above (within the RRTF comment section), as a result of a miscommunication within the EPA related to timing of the posting, only one comment was viewed by researchers as related to the first notice upon commencement of the first comment period (23 September 2006). We

apologize for this as it was unintended. Because the EPA seeks to construct a fair and unbiased survey, the agency has objectively reviewed all comments from both comment periods, addressed all comments here, and made adjustments to many of the intended survey questions.

The ICR is entirely too narrow in scope and will not meet EPA's stated objective of assessing household impacts on the sustainability of urban ecosystems.
Integrating household and household service use of rodenticide data and responses related to awareness of impact on the sustainability of urban ecosystems will be used to assess the potential contribution that household rodenticides make to potential pesticide pollution as indicated by wildlife observation and research and assessment of factors that contribute to environmental awareness. We are using rodenticide use as a case study to evaluate environmental attitudes and decision-making by individuals. Broadly, such information will allow for the understanding of any relationships as to whether awareness of particular actions that might affect ecosystem sustainability and vice versa. We have modified the title of this research to better reflect the social survey questions.

Even if EPA were to broaden the scope of the ICR, a mail questionnaire is not the appropriate means to obtain the desired information. Response rates for mail questionnaires are predictably low and will not be significantly increased by providing respondents with a #2 pencil, as EPA proposes.
Although a low response rate is a common concern with mail surveys, the EPA has selected a sample size based on an assumed response rate of at least 50% (typical for mail surveys; see part B.4.) that will allow for statistical integrity of the data. Sample size will be adjusted conservatively based on the assumed response rate. Mail surveys are less labor intensive than telephone surveys, and less invasive in that this method allows respondents to complete the survey at a time convenient for them. The EPA will not be providing respondents with the #2 pencil.

Finally, the mail questionnaire is replete with biased and ambiguous questions. Numerous examples are discussed in RRTF's comments. In light of the complexity and ambiguity of the questionnaire, HACCO believes that EPA has woefully underestimated the estimated completion time of 20 minutes.
We have addressed each of RRTF's comments above. The EPA has estimated that each question should take no more than 30 seconds to complete. With 35 questions total, respondents should be able to complete the questionnaire, on average, in less than 20 minutes time.