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Report/Article Title Typescript: Notes and diagrams regarding TCDD exposure

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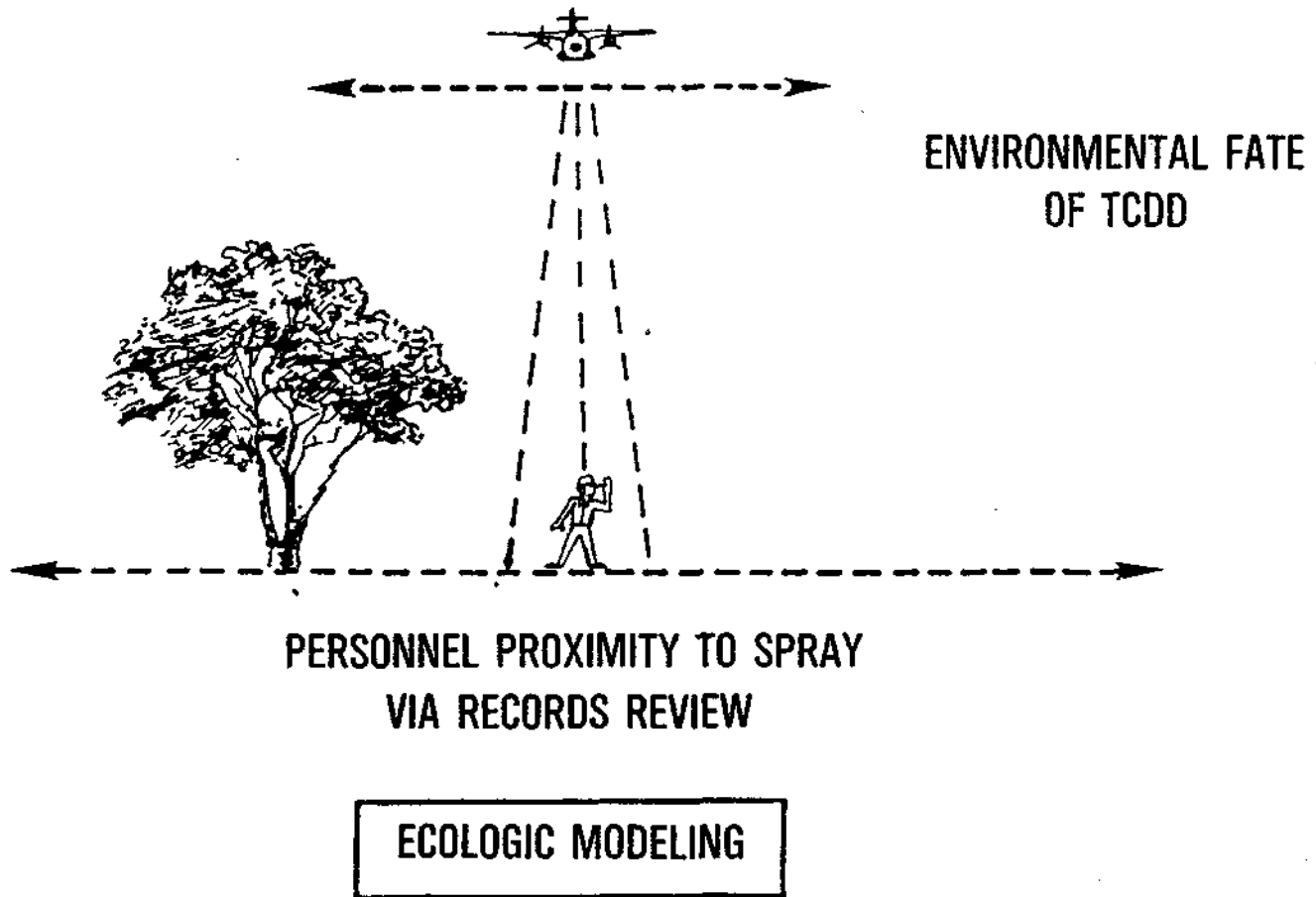
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Number of Images 11

Description Notes Typescript and diagrams regarding TCDD exposure, Australian Senate Committee on Science and the Environment, Ranch Hand versus Marine exposure

PARAMETERS OF TCDD EXPOSURE

HERBS TAPE
ACCURACY



ISSUE: CAN A VALID HERBICIDE ORANGE (TCDD) EXPOSURE ALLOCATION BE MADE FOR EACH INDIVIDUAL (GROUP) IN PREPARATION FOR A STUDY OF GROUND PERSONNEL?

EXPOSURE ALLOCATION OUTCOMES

- VALID
- MISCLASSIFIED
- BIASED

STUDY OUTCOMES

TRUTH
INDETERMINANT
POSITIVE OR NEGATIVE
NOT TRUTH

EXPOSURE ALLOCATION METHODS

SUBJECTIVE MEANS:

- QUESTIONNAIRE TECHNIQUES

OPINION: INTENTIONAL MALATHION EXPOSURE BY SIMILAR AIRCRAFT IN RVN HAS CREATED A POSITIVE IRREVOCABLE BIAS

- SOLICITATION FOR "EXPOSED" VOLUNTEERS

OPINION: UNCORRECTABLE SELECTION BIAS

EXPOSURE ALLOCATION METHODS

OBJECTIVE MEANS:

- RECORD REVIEWS IN SELECTED OCCUPATIONAL GROUPS

OPINION: BIAS, MISCLASSIFICATION POSSIBLE, SMALL SAMPLE SIZE ASSURED

- PROBABILISTIC DETERMINATION VIA HERBS TAPES AND RECORD REVIEW FOR TIME/DISTANCE ESTIMATES

OPINION: MISCLASSIFICATION ASSURED; SELECTION BIAS PROBABLE, TRUE ERROR RATES IMPOSSIBLE TO MEASURE; VALIDITY COMPROMISED

PROCESS OF EXPOSURE ALLOCATION INFLUENCES:

- COHORTS (STUDY AND COMPARISON) TO BE SELECTED
- METHOD(S) OF COHORT SELECTION
- SAMPLE SIZE OF COHORTS
- STATISTICAL POWER
- OPERATION OF CONFOUNDERS (MALATHION, COMBAT STRESS, ETC.)
- ● SCIENTIFIC/LAY ACCEPTANCE OF STUDY

SOME STUDY OPTIONS BASED ON EXPOSURE DILEMMA

- PERFORM A "RVN EXPERIENCE STUDY"
- DECLARE AGENT ORANGE STUDY NOT DOABLE
- BOTH OPTIONS ABOVE
- DETERMINE FEASIBILITY OF USING OCCUPATIONAL GROUPS
- CONDUCT AGENT ORANGE STUDY BASED UPON PROBABILISTIC EXPOSURE
- ABOVE OPTION, ADD COHORT(S) FOR "RVN EXPERIENCE STUDY"

OPINION

BASED UPON

- WORLD LITERATURE: ZERO TO LOW INCIDENCE OF HEALTH CONSEQUENCES, RARE OR DIFFICULT TO MEASURE CLINICAL ENDPOINTS
- FACT OF UNESTIMATABLE ERROR RATES FOR EXPOSURE ALLOCATION IN GROUND TROOPS BASED UPON HERBS TAPES
- YIELDS A STUDY OF UNKNOWN ABILITY (POWER) TO DETECT A EFFECT
- USE OF PROBABILISTIC MEANS TO DETERMINE EXPOSURE

IS

SCIENTIFIC HOKUM

AUSTRALIAN SENATE COMMITTEE ON SCIENCE AND THE ENVIRONMENT

CONCLUSIONS

- LITTLE LIKELIHOOD AUSTRALIAN TROOPS WERE DIRECTLY OR INDIRECTLY EXPOSED TO HERBICIDES
- DIRECT EXPOSURE TO MALATHION WAS HIGHLY PROBABLE IN THE MAJORITY OF CASES
- EXPOSURE TO ANTIMALARIAL DRUGS WAS ROUTINE
- ANY ADDED CARCINOGENIC/TERATOGENIC BURDEN ON AUSTRALIAN TROOPS WAS RELATIVELY SMALL
- BASED ON CURRENT DATA,
 "THERE IS NO CONVINCING EVIDENCE THAT BIRTH ABNORMALITIES,
 PSYCHIATRIC DISORDERS AND MORTALITY ARE EXCESSIVE AMONG
 VIETNAM VETERANS."
- ALL FUTURE AUSTRALIAN GOVERNMENT STUDIES WILL ADDRESS THE ISSUE OF VIETNAM SERVICE, NOT SPECIFIC CHEMICAL EXPOSURE

KEY ITEMS OF CONSIDERATION

MARINE STUDY RELATIVE TO RANCH HAND STUDY

- "EXPOSED " MARINES RECEIVED AN AVERAGE EXPOSURE 1/1000 THE AVERAGE DOSE RECEIVED BY RANCH HAND PERSONNEL
- MARINE EXPOSURE ALLOCATIONS BASED ON DISTANCE FROM SPRAY PATHS LEAD TO SERIOUS MISCLASSIFICATION OR BIAS
- MARINE EXPOSURE ALLOCATIONS BASED ON TIME IN A SPRAY AREA SUBSTANTIALLY ALTER THE SIZES OF THE STUDY AND CONTROL POPULATIONS AND LEAD TO SERIOUS MISCLASSIFICATION

CONCLUSIONS

RANCH HAND VERSUS OR PLUS THE MARINE POPULATION

- **OVERWHELMING ALLOCATION PROBLEMS FOR “EXPOSURE-NONEXPOSURE” IN MARINES**
 - **MISCLASSIFICATION BY GAO CRITERIA = DILUTIONAL EFFECT**
 - **ALLOCATION BY PERSONAL HISTORY = BIAS**
- **MARINE EXPOSURE 1/1000 OF RANCH HAND EXPOSURE**
- **MARINE - RANCH HAND POPULATIONS DIFFER BY HOST FACTORS; AGE, RACE, EDUCATIONAL LEVEL, ETC**
- **BY CONSIDERATION OF EXPOSURE DIFFERENTIAL AND MISCLASSIFICATION, RANCH HAND STUDY FAR MORE POWERFUL THAN INDEPENDENT MARINE STUDY OR ADDITIVE STUDY TO INCLUDE MARINES**
- **ADDITION OF MARINE POPULATION TO RANCH HAND POPULATION = UNACCEPTABLE SCIENCE**

MORTALITY ANALYSIS

POWER COMPARISON OF THE RANCH HAND STUDY TO THE MARINE POPULATION CONSIDERING MISCLASSIFICATION AND RELATIVE EXPOSURE *

POWER TABLE

RANCH HAND POWER 1-B	% MISCLASSIFICATION	MARINE STUDY POWER			
		EXPOSURE LEVELS RELATIVE TO RANCH HAND			
		1/10	1/20	1/100	1/1000
.87	0	.38	.17	.07	.05
	10	.33	.15	.06	.05
	25	.26	.13	.06	.05

ASSUMPTIONS: RH STUDY POP. 1,200; 6,000 (1:5)
 MARINE STUDY POP. 21,900; 196,100
 NORMAL INCIDENCE OF DISEASE = 0.001
 DISEASE INCIDENCE IN RH = 0.004
 LINEAR DOSE - RESPONSE
 MISCLASS OF MARINE CONTROLS EXCLUDED

* INCORRECT POPULATION NUMERICS BASED ON ENVIRONMENTAL FATE OF TCDD