

CREM
Centre for Research on
Environmental Microbiology
Designing a safer tomorrow



CRMC
Centre de recherche en
microbiologie environnementale
Pour un futur plus sain

**MICROBICIDAL ACTIVITIES OF ENVIRONMENTAL
SURFACE DISINFECTANTS: HOW RELEVANT ARE
TEST METHODS AND LABEL CLAIMS?**

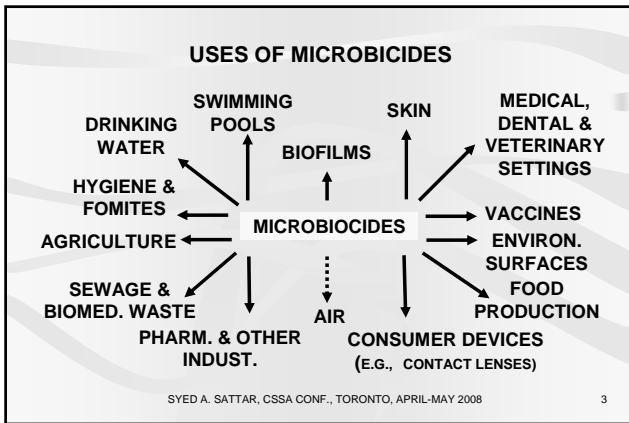
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FOCUS

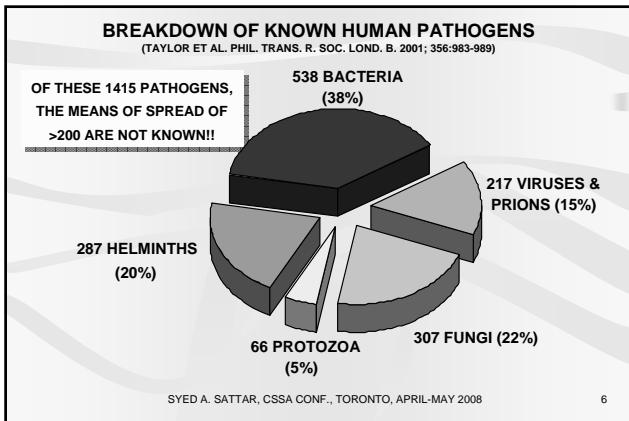
- **ON MICROBICIDES FOR DISINFECTING ENVIRONMENTAL SURFACES**
 - **HUMAN & ANIMAL PATHOGENS**
- **WILL NOT COVER:**
 - **MEDICAL DEVICE DISINFECTANTS**
 - **SANITIZERS**
 - **ANTISEPTICS**

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INTRODUCTION & CONTEXT

- **INFECTIOUS DISEASES STILL A MAJOR THREAT**
 - **GLOBALLY, CAUSE ~30% OF ALL RECORDED FATALITIES**
- **CHANGING PROFILE OF NOSOCOMIAL PATHOGENS**
- **EXPANDING IMPACT ON HEALTH & ECONOMY**
 - **SOCIETAL CHANGES (TRAVEL, LIFE-EXPECTANCY, ETC.)**
 - **INCREASING LINKS TO CHRONIC DISORDERS**
 - **OUTBREAKS IN ANIMALS (AVIAN FLU)**

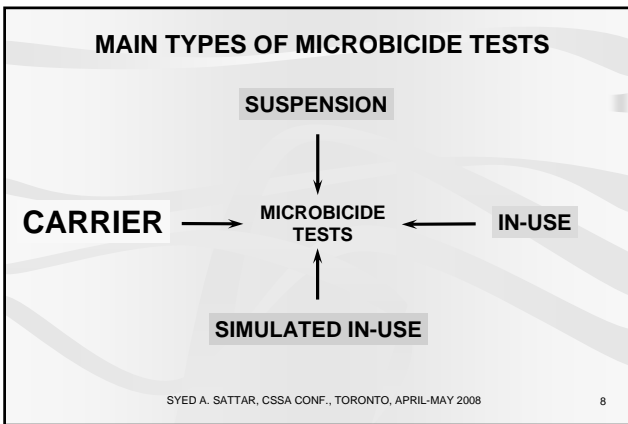
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MICROBICIDES & ENVIRONMENTAL CONTROL

- EVIDENCE FOR EFFECTIVENESS MAINLY CIRCUMSTANTIAL
- FIELD STUDIES ARE GENERALLY DIFFICULT & EXPENSIVE
 - MISTAKES/MISUSE & EVIDENCE FOR USEFULNESS OF MICROBICIDES
- BENEFITS OF MICROBICIDE USE IN MANUFACTURING
- LAB-BASED EVIDENCE SHOWING SUCCESS
- REVIVAL OF INTEREST IN ENVIRONMENTAL CONTROL
 - MICROBICIDES ARE THE BACKBONE
 - INCREASING CONCERNS OVER TESTING, LABEL CLAIMS & SAFETY

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DEFICIENCIES IN COMMON CARRIER TESTS

- CONTACT TIME TOO LONG
- TOO LARGE A VOLUME OF MICROBICIDE
- INAPPROPRIATE SURROGATES, PRODUCT DILUENT
- NO OR INADEQUATE SOIL LOAD
- WASH-OFF OF TEST MICROBES MAY OCCUR
- LACK OF QUANTITATION & REPRODUCIBILITY

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METHODS DEVELOPMENT AT CREM

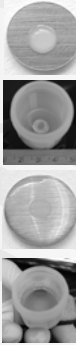
- TWO DECADES OF WORK FUNDED MAINLY BY U.S. EPA
- ACTIVE PARTICIPATION IN STANDARDS-SETTING BODIES SUCH AS AOAC, ASTM, GEN, CGSB, CSA, ISO & NSF
- CANADA & AUSTRALIA ACCEPT CREM METHODS
 - U.S. EPA IS STARTING TO DO SO!!
- OECD INITIATIVE ON HARMONIZED METHOD
 - CREM COMPARED ~30 DIFFERENT METHODS & MADE RECOMMENDATIONS IN OCTOBER 2005
 - AN INTERNATIONAL COLLABORATION SOON TO BE LAUNCHED
- SUMMARY OF CREM'S QUANTITATIVE CARRIER TEST (QCT)

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CREM'S QUANTITATIVE CARRIER TEST (QCT)

- USE WITH ALL CLASSES OF PATHOGENS
- USE WITH LIQUIDS, SPRAYS & GASES
- 1 CM DIAM. DISKS OF TEST SURFACE
- 10 µL OF MICROBIAL SUSPENSION (DRIED)
- 50 µL OF TEST FORMULATION
- A 'UNIVERSAL' SOIL LOAD
- 5-10 TEST & 3 CONTROL CARRIERS
- NOW AN ASTM STANDARD (E-2197)



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HAZARDS IN MICROBICIDE USE

TOXICOLOGICAL	
STAFF	RESPIRATORY & SKIN SENSITIZATION
PATIENT	RESPIRATORY/SKIN SENSITIZATION; RESIDUES IN DEVICES & TISSUE DAMAGE
MICROBIOLOGICAL	
RESISTANCE	RESISTANCE TO IN-USE LEVELS OF MICROBICIDE
CROSS-RESISTANCE	CROSS-RESISTANCE TO ANTIBIOTICS
PRODUCT STORAGE	IMPROPER STORAGE & BACTERIAL GROWTH
IMPROPER PRODUCT	WRONG FORMULATION & CROSS-INFECTIONS
CHEMICAL	
IMPROPER STORAGE	IMPROPER STORAGE & EXPLOSIONS/FIRES
CORROSION	DAMAGE TO ITEMS SUCH AS FLEXIBLE ENDOSCOPES
IMPROPER MIXING	MIXING OF INCOMPATIBLE CHEMICALS; NEUTRALIZATION OF ACTIVITY
IMPROPER MONITORS	INACCURATE DIPSTICKS/MONITORING DEVICES

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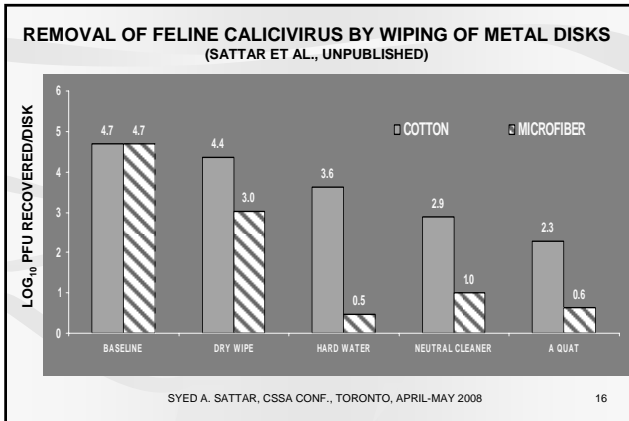
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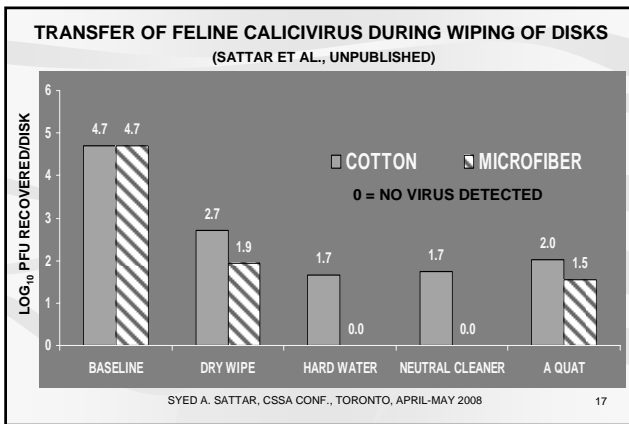
HAZARDS IN MICROBICIDE USE (CONT'D.)	
ENVIRONMENTAL	
AIR QUALITY	VOLATILES & LOWERING OF INDOOR AIR QUALITY
HORMONE DISRUPTION	INTERFERENCE WITH HORMONE FUNCTIONS
WATER/FOOD QUALITY	CONTAMINATION OF FOOD & WATER
PRODUCT LABEL	
UNCLEAR DIRECTIONS	CONFUSING LABEL DIRECTIONS & IMPROPER USE
CONTACT TIME	CONTACT TIMES GIVEN OFTEN TOO LONG FOR FIELD USE
PURCHASING	
IMPROPER PURCHASE	PURCHASING DECISIONS OFTEN BASED ON COST ALONE
TRAINING	
TRAINING	INADEQUATE FOR FIELD USE; HIGH STAFF TURN-OVER

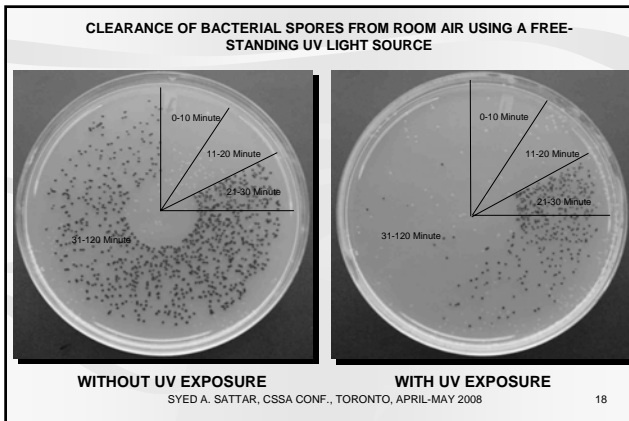
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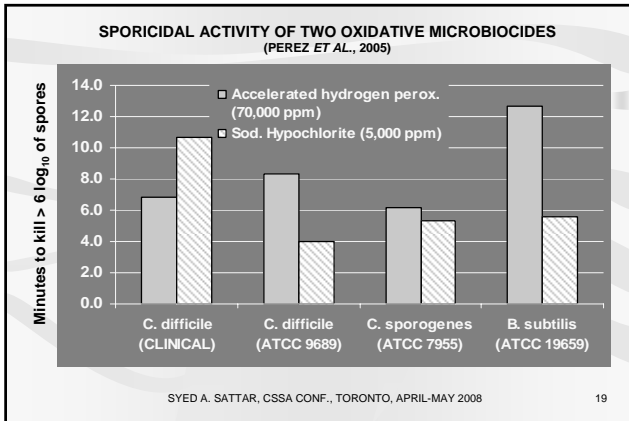
- DESIRED TRAITS IN A MICROBICIDE**
- AS NON-TOXIC & ENVIRONMENTALLY FRIENDLY AS POSSIBLE
 - HIGH MATERIALS COMPATIBILITY
 - BROAD-SPECTRUM & FAST-ACTING
 - UNSCENTED, VOC-FREE & NON-STAINING
 - EASY TO USE WITH CLEAR DIRECTIONS
 - COST-EFFECTIVE & READILY AVAILABLE
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- ARE SAFER & BETTER ALTERNATIVES AVAILABLE?**
- INCREASING EMPHASIS ON 'GREEN' TECHNOLOGY
 - 'NATURAL' INGREDIENTS & MICROBICIDAL ACTION!?
 - MICROBICIDES MAY NOT ALWAYS BE NEEDED
 - PHYSICAL AGENTS E.G., UV & TITANIUM DIOXIDE (FIGURE)
 - WIPING ACTION WITH MICROBICIDAL ACTIVITY
 - MICROFIBER-BASED FABRICS (HISTOGRAMS)
 - STEAM-CLEANING
 - OXIDIZER-BASED PRODUCTS & PROMISE (HISTOGRAM)
 - HYDROGEN PEROXIDE, PERACETIC ACID, CHLORINE DIOXIDE
 - WIDER MATERIALS COMPATIBILITY STILL A CHALLENGE
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- EMERGING ISSUES**
- INCREASED SCRUTINY OF MICROBICIDES
 - NEWER & MORE RESISTANT PATHOGENS
 - AGGRESSIVE & MISLEADING MARKETING
 - INCREASING SALES OF TREATED ARTICLES
 - CROSS-RESISTANCE (?)
 - HAVE WE ENTERED POST-ANTIBIOTIC ERA?
 - CHEMBIOACTION?
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- CONCLUDING REMARKS**
- MAJOR STRIDES IN BETTER MICROBICIDE TESTS
 - QCT A CONTENDER FOR GLOBAL HARMONIZATION
 - GREATER EMPHASIS ON DEVELOPMENT & MARKETING OF SAFER & BETTER MICROBICIDES
 - PRODUCTS LABELS TO BE SIMPLIFIED
 - REGULATORY PROCESS TO BE UPDATED & STREAMLINED
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