

THE FOLLOWING PRESENTATION WAS DESIGNED FOR THE PURPOSE OF COMMUNICATING THE CONCEPT OF LONGER TERM FUNDAMENTAL RESEARCH. IT WAS AIMED AT THE SENIOR BUSINESS MANAGEMENT LEVEL IN ORDER TO OBTAIN THEIR COMMITMENT TO THIS MEANS OF THE LONG TERM CONTINUITY OF OUR BUSINESS. IT DOES NOT DEFINE THE "DESIGN FOR IMPLEMENTATION STAGE" WHICH REPRESENTS THE NEXT MAJOR PHASE OF THE PROJECT.

THE SCIENTIFIC PRESENTATION IS DIVIDED INTO 3 SECTIONS.

- 1) A REVIEW OF EXTERNAL RESEARCH FINDINGS IN CONJUNCTION WITH INTERNAL BAT ACTIVITY;
 - 2) A REVIEW OF PAST BIOLOGICAL RESEARCH AS AN EXAMPLE OF PROGRESS MADE ON A CHANGING OBJECTIVE;
 - 3) THE WAY FORWARD FOR FUTURE STUDIES.
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- 1) THIS SECTION ADDRESSES CIGARETTE SMOKING IN THE CONTEXT OF THE SMOKING AND HEALTH CONTROVERSY, MAKING SPECIFIC REFERENCE TO CURRENT LITERATURE ADVICE ON A LESS HAZARDOUS CIGARETTE. IN ACKNOWLEDGING THE COMPLEXITY OF THE ISSUE OF DISEASE ATTRIBUTION TO SPECIFIC CHEMICAL COMPONENTS

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AS WELL AS PRIORITIZING THE BIOLOGICAL ACTIVITY AND THRESHOLD LEVELS OF THESE COMPONENTS, IT IS VERY QUICKLY REALIZED THAT THE EXTERNALLY DEFINED "SAFER" CIGARETTE, NOT UNEXPECTEDLY IS A MOVING TARGET, THE MOVEMENT BEING DICTATED BY THE EVOLUTION OF THE SCIENTIFIC KNOWLEDGE BASE. NONETHELESS CORPORATE RESPONSIBILITY REQUIRES THAT THE AREA BE ADDRESSED NOT ONLY IN MONITORING THIS KNOWLEDGE BASE BUT ACTING ON IT AND ADDING TO IT.

AFTER HAVING ESTABLISHED (FROM EXTERNAL REFERENCES) A PRIORITY LISTING OF COMPONENTS IN CIGARETTES HAVING NEGATIVE IMPLICATIONS TO HEALTH, THE POSSIBILITY OF ELIMINATING, MODIFYING OR NEUTRALIZING THEIR IMPACT ON THE CIGARETTE PRODUCT IS ADDRESSED. SUGGESTIONS AS TO HOW THIS CAN BE ACCOMPLISHED ARE BROUGHT FORWARD FROM PAST AND PRESENT IN-HOUSE BAT RESEARCH AS WELL AS EXTERNALLY PUBLISHED STUDIES; THE MORE CONVENTIONAL MEANS INVOLVING LEAF, PROCESSING AND PRODUCT DEVELOPMENT ARE INCLUDED AS WELL AS SUCH NON CONVENTIONAL MEANS AS THE USE OF ANTIOXIDANTS. IT IS IMPORTANT TO HAVE IN PLACE ASSESSMENT PROCEDURES TO DETERMINE THE BIOLOGICAL CONSEQUENCES OF ANY PRODUCT CHANGES. THE REVIEW CONCLUDES BY PLACING THE SMOKING ISSUE INTO CONTEXT AS IT RELATES TO LIFESTYLE AND ENVIRONMENT WITH THE INTERACTION OF SMOKING WITH PERSONALITY, STRESS AND GENETIC FACTORS, ALL LINKING WITH DISEASE DEVELOPMENT. THIS UNDERPINS THE NEED OF BETTER UNDERSTANDING THE GENETIC PREDISPOSITION, MECHANISTIC PATHWAY OF DISEASE AND ALSO

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DEFENSE MECHANISMS WHICH CAN PLAY A PART IN MINIMIZING DISEASE RISK.

- 2) THIS SECTION IS INTRODUCED WITH A REVIEW OF THE CHRONIC DISEASES ASSOCIATED WITH SMOKING AND AN EXPLANATION OF THE PRESENT UNDERSTANDING OF THE MECHANISMS INVOLVED. THIS IS FOLLOWED BY A REVIEW OF THE BIOLOGICAL RESEARCH AREA WITHIN BAT AND AN ASSESSMENT OF PROGRESS MADE RELATIVE TO EXTERNAL DATA BASES. THE MOUSE SKIN PAINTING STUDIES SPONSORED BY BAT ARE COMPARED WITH THOSE CONDUCTED BY N.C.I., AND THE DISCREPANCIES ARE HIGHLIGHTED. THESE LONG TERM CARCINOGENIC TEST RESULTS ARE THEN COMPARED WITH THE SHORT TERM AMES MUTAGENIC TESTS AND THE CONSISTENCY OF THE TESTS IN DEMONSTRATING CHANGES IN BIOLOGICAL ACTIVITY, IS POINTED OUT. A LEAGUE TABLE BASED ON SPECIFIC ACTIVITY IS DEMONSTRATED, ACKNOWLEDGING ALL OF THE LIMITATIONS OF THESE TESTING METHODS AS A RANKING TOOL, AS WELL AS THE LACK OF AGREEMENT WITHIN THE SCIENTIFIC COMMUNITY OF SUCH TESTING PROCEDURES. THE AREA IS SUMMARIZED IN POINTING OUT THE SLOW BUT POSITIVE PROGRESS MADE OVER THE PAST 20 YEARS IN THIS AREA AND HOW CURRENT FINDINGS HAVE HIGHLIGHTED AVENUES FOR FUTURE RESEARCH TO REDUCE BIOLOGICAL ACTIVITY.

- 3) IN ASSEMBLING A STRUCTURE FOR THE FUTURE DIRECTION IN RENDERING CIGARETTES LESS HARMFUL, ONE NEED GO ONLY AS FAR AS REVIEWING THE DOCUMENTATION OF THE ROYAL COLLEGE

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OF PHYSICIANS REPORT, THE U.S. SURGEON GENERAL'S REPORT AND THE MORE RECENT W.H.O. PUBLICATION, ON THE EVALUATION OF CARCINOGENIC RISK RELATING TO TOBACCO SMOKING. THERE IS A CONSISTENT THEME THROUGHOUT THIS LITERATURE, POINTING TO AREAS OF RESEARCH IN WHICH IT IS NECESSARY FOR THE INDUSTRY TO BE INTIMATELY INVOLVED. THESE APPROACHES CAN BE CATEGORIZED AS:

1. RESEARCH IN SMOKE CHEMISTRY AS A MEANS OF REDUCING TOXIC COMPONENTS OF CIGARETTE SMOKE;
2. SHORT AND LONG TERM BIO-ASSAYS BEING DEVELOPED AND APPLIED TO ASSESS THE PROGRESS MADE IN (1) ABOVE;
3. EPIDEMIOLOGICAL STUDIES LOOKING AT ALL OF THE OVERLAPPING COMPONENTS OF DISEASE, SMOKING BEING BUT ONE OF THEM;
4. MECHANISMS OF DISEASE PRODUCTION WHICH HIGHLIGHTS FIRST THE NEED TO KNOW HOW THE DISEASE DEVELOPS AND THOSE COMPONENTS NECESSARY FOR ITS DEVELOPMENT AS PRIOR KNOWLEDGE BEFORE JUSTIFYING THE REMOVAL OF THESE COMPONENTS. ALSO, THIS AREA WOULD ADDRESS SMOKING AND IMMUNE MECHANISMS AS WELL AS THE IDENTIFICATION OF SUSCEPTIBLE INDIVIDUALS.

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THE UNDERTAKING OF SUCH A LONGER TERM RESEARCH PROGRAMME IS THE ONLY WAY OF BETTER UNDERSTANDING OUR PRODUCT AND THE IMPACT IT MAY HAVE ON OUR CONSUMERS.

OPTIMISTICALLY, POSITIVE RESULTS FROM THIS PROJECT MAY HAVE THE POTENTIAL, HOWEVER SMALL, OF IMPROVING THE PUBLIC ENVIRONMENT RESULTING IN A GRADUAL INCREASE IN THE TOTAL MARKET, OR, MORE REALISTICALLY, NEUTRALIZING THE EXTERNAL ENVIRONMENT, WHICH COULD RESULT IN MAINTENANCE OF THE EXISTING MARKET, OR AT LEAST RETARD THE DECLINE. WITHIN THE COMPETITIVE ENVIRONMENT, SUCH RESEARCH AFFORDS BOTH OFFENSIVE AND DEFENSIVE OPPORTUNITIES IN MODIFYING OUR EXISTING PRODUCT BASE.

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