

Fundamental Research Programme 1991

AIM	APPROACH	END BENEFIT	IMPLEMENTATION	Prob	Value	Time Scale
<b>SMOKE QUALITY IMPROVEMENT</b>						
<u>Optimisation of positive effects:</u>						
<b>Tobacco Treatment</b> To improve smoke quality by tobacco modification.	Use of enzymic means to enhance natural tobacco flavour reactions (that underpin Root technology).	Improve taste/flavour of all products.	Possible addition of a 'hold vessel' prior to PMD for enzymic reaction to develop.	L/M	H	Lg
<b>Physical Parameters &amp; Smoke Quality</b> To establish a model for predicting rod pressure drop and for relating effects, if any, on smoke quality	Study of interaction of all parameters that affect pressure drop and their effect on smoke chemistry and taste.	New approach to smoking quality improvement	Selection of blend components, means of controlling cut length, width, shape etc; balance of rod/filter/ventilation characteristics. <i>the model approach</i>	H	L	M
<b>Smoke Transfer Studies</b> To explore different mechanisms whereby materials (flavourants, nicotine, menthol) are transferred to smoke.	Systematic experiments to clarify mechanisms and provide data for e.g. BATCF to create a model and coaxial cigarettes.	Better control of delivery of materials that contribute strongly to smoke taste and flavour.	Through Product Research Group in CAC labs, who are seeking eg. controlled puff-by-puff delivery characteristics. Example - microencapsulated materials releasing mouth freshner in last puff.	M	M	M
To devise new techniques for transferring materials to smoke.	Assessing new proprietary materials for microencapsulation and their performance in burning cigarettes.					
Smoker satisfaction at very low tar but normal nicotine by novel cigarette design.	Tobaccos chemically or other wise treated to reduce tar yield, cast as sheet if necessary; tobacco extracts/flavours will be incorporated possibly by microencapsulation.	Cigarettes with the satisfaction of higher tar delivery cigarettes but at very low tar.	Tobacco treated in 'extra process', perhaps cast as sheet by any recon. process. Blended with normal grades.	L/M	H	Lg

Key  
 L = Low  
 M = Medium  
 H = High  
 \*H = High (Defensive)

Lg = Long (4-5 years)  
 M = Medium (2-3 years)  
 S = Short (1 year)

Prob = Probability of success  
 Value = Worth to BAT  
 Time Scale = Time to application

111009205

BATCO CONFIDENTIAL - CATEGORY I: MINNESOTA TOBACCO LITIGATION

BATCo document for Province of British Columbia 25 October 1999

BATCO CONFIDENTIAL - CATEGORY I: MINNESOTA TOBACCO LITIGATION

AIM	APPROACH	END BENEFIT	IMPLEMENTATION	Prob	Value	Time Scale
<p><u>Impact/Irritation</u></p> <p>a) Full-bodied smoke with controlled impact and irritation characteristics.</p> <p>b) To optimise smoke impact and irritation characteristics</p>	<p>Study the influence of various ammonia treatments on smoke sensory and chemical characteristics.</p> <p>Establish guide-lines for density /moisture combinations that optimise irritation/impact.</p>	<p>More pleasurable smoking products</p> <p>More pleasurable smoking products</p>	<p>Appropriate NH<sub>3</sub> treatments applied to tobacco (cf. CPCL 9, Emerge).</p> <p>Adjustment/control of cigarette density &amp; moisture</p>	L/M	H	Lg
				H	M	M
<p><u>Body/Mouthful</u></p> <p>To understand what determines these characteristics of smoke in order that they may be incorporated in low delivery products.</p> <p>.....</p> <p><u>Elimination of negative effects:</u></p> <p><u>After Taste</u></p> <p>To understand the causes of unpleasant aftertaste including 'dry-mouth' syndrome.</p> <p>.....</p> <p><u>Adventitious Compound Migration</u></p> <p>To determine principles governing the migration of compounds from eg packaging materials to product. Effects on smoke quality will be measured</p>	<p>To synthesize smoke with different body/mouthful in order to identify the chemical/physical parameters that govern this effect.</p> <p>Attempts will be made to separate physical and chemical effects.</p> <p>.....</p> <p>After taste &amp; dryness effects will be correlated where possible to chemical classes; means of reducing these components will be sought.</p> <p>.....</p> <p>Investigation of how chemical class influences the speed of transfer across the various media involved in the cigarette package.</p>	<p>Satisfying smoke at low delivery</p> <p>.....</p> <p>Superior smoking product.</p> <p>.....</p> <p>Improved smoke quality - free of 'off-taints'.</p>	<p>Uncertain - grade selection and/or treatment. Special blend, filter, ventilation combinations</p> <p>.....</p> <p>Through process treatments, tobacco grades or special filters which reduce the undesirable chemical class/or addition of compounds to smoke that ameliorate the effect.</p> <p>.....</p> <p>Applications depends on principles identified eg new barrier-coated packaging materials.</p>	L/M	L/M	Lg
				M/H	M	M
				M	M	M

211009205

BATCO CONFIDENTIAL - CATEGORY I: MINNESOTA TOBACCO LITIGATION

AIM	APPROACH	END BENEFIT	IMPLEMENTATION	Prob	Value	Time Scale
<u>Reconstituted Tobacco</u> To improve smoke quality from reconstituted tobacco.  <i>Smoke in pipe tobacco.</i>	Check whether claims of off-taste are valid. If so, identify source of off-taste. Seek means of improving quality from recon.	Improvement in smoke quality from recon-containing cigarettes.	Through machinery mods/material changes in recon. processes.	H	L	S
<b>ENVIRONMENTAL ISSUES</b> <u>Sidestream formation</u> To elucidate the mechanism responsible for the performance of low S/S papers  <u>Total Sidestream Reduction</u> Radical reduction in S/S by novel cigarette design.  <u>Environmental Tobacco Smoke</u> To generate data, generally for publication, on ETS produced in controlled environments.	Systematic experiments to clarify various theories - filtration additive surface area, water formation etc.  Tobacco rod with tobacco sections linked by low smoulder fuse.  Chemical changes to be monitored as smoke ages: particular emphasis on volatile organics and nicotine.  Subjective assessment of ETS in relation to low S/S cigarette development.	Knowledge base enabling new products with low S/S to be made  Cigarette design with low total S/S.  Knowledge base of ETS which can be used in public affairs initiatives.  Data for products which lead to improved ETS odour, irritancy etc.	Application will depend on the identified mechanism eg new paper based on new additive, permeability change etc  Rod construction modified to allow a low-smoulder fuse section to be 'laid-in.'  Dissemination of findings through scientific journals, meetings. Support to Public Affairs Departments.  Through feedback to Product Development.	H	*H	M
<u>Filter Materials</u> To have CA filters that disintegrate in the environment.  To have a totally biodegradable filter.	To replace plasticiser with degradable glue and expose filters to controlled weathering.  To investigate biodegradability of Puracell paper filters.	Environmentally friendly product.  Environmentally friendly product.	Replace plasticiser with fast setting bio-or photo degradable glue.  Use of new paper filters in cigarette production.	M/H	*H	Lg
				M/H	*H	M

502600113

AIM	APPROACH	END BENEFIT	IMPLEMENTATION	Prob	Value	Time Scale
<b>REGULATORY ISSUES</b>						
<p><u>Reduced Ignition Propensity</u> To develop a reliable test method in collaboration with CORESTA in order that guidance can be given to legislators in this area.</p>	<p>Explore both <u>direct</u> (burning furnishing materials in mock-up tests) and <u>indirect</u> (measuring e.g. heat transfer through materials) test methods.</p>	<p>BAT will be 'on-top' of test methods that are used; product development parameters of importance would be identified.</p>	<p>Through Product development of cigarettes of low ignition propensity.</p>	M	*H	M
<p><u>Biological</u> To keep abreast of biological methods that legislators may apply to cigarettes.</p>	<p>To monitor trends in new bioassays. Develop expertise in-house in those that might have relevance to tobacco products</p>	<p>BAT is prepared in the event that new regulatory requirements have to be met.</p>	<p>Current methods are used to screen new additives etc. in order to ensure that there are no significant perturbations from current norm.</p>	H	*H	Lg
<p><u>Additive Matters</u> To ensure that BAT Companies' product additives and materials meet required internal and external standards.</p>	<p>To check all available data; performance of additional tests (chemical or biological) where necessary.</p>	<p>BAT products meet all legislative requirements.</p>	<p>Through directives to BATCo Companies and offering advice more broadly, where needed.</p>	M/H	*H	S-M
<p><u>Delivery Control</u> To optimise levels of minor smoke components by tobacco modification.</p>	<p>Enzymic treatment to modify minor components generated from cellulose, either upwards eg for flavourants or downwards eg carbon monoxide.</p>	<p>Cigarettes that meet anticipated regulatory requirements and/or improved smoking quality.</p>	<p>As i) but different enzymes.</p>	L/M	*H	Lg
<p><u>Ultra Light Weight Structure</u> To reduce the amount of tobacco used in cigarettes as a means of reducing all smoke deliveries.</p>	<p>Reduce deliveries of many components of M/S and S/S by use of either foamed tobacco or inorganic fillers.</p>	<p>Cigarettes with low mainstream and S/S yields yet of conventional dimensions.</p>	<p>Foamed recon. eg by extrusion, or high inorganic recon. incorporated in blends.</p>	L	L/M	Lg
<p><u>Selective Filters</u> Selective filtration of gas phase components.</p>	<p>Activated carbon can remove gas phase/semi-volatiles but has an 'off-taste' (due to S-V's) Use membrane to protect C.- filter</p>	<p>Filters able to reduce minor components relative to tar/nicotine.</p>	<p>Special design of filter.</p>	L/M	L	M

BATCO CONFIDENTIAL - CATEGORY I: MINNESOTA TOBACCO LITIGATION.

BATCo document for Province of British Columbia 25 October 1999

502600114