PREPS and the smaller tobacco companies

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Who we are

- Lauterbach & Associates, LLC, is a consulting firm that specializes in providing contract scientific affairs and regulatory support to the tobacco industry
- Principals in the firm are:
  - John H. Lauterbach, Ph.D., DABT
  - Theresa D. Lupcho, Psy.D.
- Firm started 10/2004 when JHL retired from the Brown & Williamson Tobacco R&D

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Background

- IOM report, “Clearing the Smoke” set forth desirability, feasibility, and potential problems associated with PREPS
- PREPS introduced into the marketplace to date have not met with wide acceptance
- A PREP must be acceptable to adult smokers
  - If not, many will continue to smoke conventional products – no health benefit
  - Small companies may be better able to meet this need – potential health benefit

Why small companies may do it better?

- A PREP successful in the marketplace will likely be similar to conventional products
- Such a PREP will likely involve innovative technologies and/or innovative combinations of existing technologies
- Such innovations may come from start-ups
  - Small size -- entrepreneurial spirit
  - No ties to pre-existing processes and products
  - Requirements for commercial success may be much lower than for larger companies

Potential issues with start-up companies

- Potential limitations on resources needed to commercialize developments
  - Limited time
  - Limited funds
  - Limited personnel to manage extensive studies
- However, the need to show effectiveness remains; but, how many tests and/or assays are ***really*** necessary?
- An efficient, effective process benefits all

Smoke chemistry

- Can we use smoke chemistry to show reductions in components thought to be responsible for smoking-related diseases?
  - Can we use chemistry to demonstrate specific reductions that are relatively independent of puffing conditions?
  - This is different than “low-tar” where essentially overall deliveries rather than specific deliveries were reduced under FTC/ISO conditions
  - Chemistry almost always first step in an assessment; if anticipated effects not seen, no point in going further

What do we mean by smoke chemistry?

- Mainstream Hoffman analytes with caveats:
  - Expanded list with particular focus on smoke components of concern including free radicals
  - Smoke collection conditions that represent range of expected puffing conditions
  - Accredited facilities and staff
- Other mainstream components as deemed necessary because of novel tobacco additives and/or cigarette design

Specific components in smoke – 1

- Components thought to be associated with smoking-related diseases:
- Cancer endpoints
  - Hecht (1999) weight-of-evidence approach
    TSNAs ≈ specific PAHs >> metals, free radicals/oxidative damage, misc. organics
  - Haussmann *et al.* (2001) risk-assessment approach
    1,3-butadiene, acetaldehyde, acrylonitrile, benzene
  - Pryor (1997) free radicals

Specific components in smoke – 2

- Non-cancer endpoints
  - Haussmann *et al.* (2001) risk-assessment approach
    acrolein, acetaldehyde
  - Pryor (1990) free radicals
- Other components of potential concern
  - carbon monoxide, nitrogen oxides
  - aromatic amines, heterocyclic aromatic amines
  - diacetyl and other dicarbonyls

Dealing with smoke chemistry data

- Is a product a PREP if it has “better” smoke chemistry results than a conventional product of “equal” delivery?
  - Under what smoking conditions?
  - How much “better” is enough?
- Is a product a PREP if it has “better” smoke chemistry results than a known PREP of “equal” delivery under the same smoking conditions?

If chemistry not enough, what else?

- Smoking behavior and usage
  - Will studies based on the filter analysis method (St. Charles *et al.*, 2004) be sufficient?
    - Method estimates nicotine delivered to smoker and number of cigarettes consumed and butt length
    - Method well correlated with urinary biomarkers of nicotine uptake
- Changes in uptake of smoke components
  - Will biomonitoring studies be needed?
    - Possibly only if assessment of design and ingredients indicates potential for unexpected changes in uptake

Conclusions – 1

- The best technology should be available for PREPS
  - Smaller companies may be more effective in bringing needed technologies to market
  - Requirements for PREP status must be effective but not so burdensome that it stifles technology
  - Focus should be on reductions of components of concern that can be achieved over a range of puffing conditions
  - An efficient, effective assessment process benefits all

Conclusions – 2

- Smoke chemistry can be used to determine levels of components of concern under several different puffing conditions
  - If results are less than equal to a known PREP is the proposed PREP also a PREP?
  - How much of a reduction versus conventional product is enough?
- Answers to such questions may have to come from group making the assessments

Conclusions – 3

- Intake and other measures of consumption can be obtained from the filter analysis method
- Whether or not additional chemical or biological tests are needed may depend on ingredients and/or construction materials

References cited in presentation

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