

containing botanicals in 1999 (Refs. 8 and 9). Probably only a small percentage of these consumers would be interested in one or more of the botanicals whose names would be affected by this direct final rule. In the absence of other information, we assume that the proportion of consumers using the botanical ingredient names that the direct final rule would change is the same as the proportion of labels bearing those names or 3 to 6 percent. These percentages correspond to 3 to 6 million consumers.

We do not know the amount of time these consumers would need to discover that they cannot locate a product containing a desired botanical ingredient by the name under which they were accustomed to finding it, investigate the cause, and discover the new name. The methods consumers would use to resolve these issues are probably: (1) Asking a salesperson, (2) reading information on current botanical names in books or the Internet, or (3) reading additional product labels or brochures, some of which might voluntarily indicate the relevant name changes. The amount of time particular consumers devote to finding ingredients that have different names will vary with their interest in the ingredient and the number of ingredients involved. Consumers interested in multiple affected ingredients would probably spend the greatest amount of time on the first change they encounter because they could use some of the information they discover about that change to deal with additional changes. For example, they might learn that names have changed and develop a method for finding the new name. We assume that each affected consumer might spend between 0 and 30 minutes to process the name changes. The average value of 1 hour of leisure time should be similar to the average value of 1 hour of working time, which was \$15.66 in January 2001 (Ref. 10). Therefore, we estimate a maximum search cost increase of between \$23 million (3 million x 0.5 hours x \$15.66 per hour) and \$47 million (6 million x 0.5 hours x \$15.66 per hour). This burden is a one-time cost, because future consumers of these products would not need to switch from the old name to the new name.

Combining the two types of costs, relabeling and search costs, gives a range of total one-time costs of \$25 to \$54 million.

b. *Benefits of option two.* The direct final rule would reduce product search costs for consumers who currently shop for dietary supplements containing desired botanical ingredients by using

Latin binomial names or the nonstandardized names that might appear along with Latin binomial names, but who would be able to use one or more of the 1,500 additional standardized common names in the 2000 edition of the *Herbs of Commerce*. The direct final rule would reduce these consumers' search costs because standardized common names tend to be shorter and more distinctive than Latin binomial names, and the same ingredients would always appear under the same standardized common name.

Other consumers who would benefit from the direct final rule are those who shop for dietary supplements containing botanical ingredients by using the standardized common names listed in the 1992 edition of *Herbs of Commerce*, but who are currently unable to differentiate desired ingredients from undesired ingredients using those standardized names. Some of these consumers might be better able to differentiate these ingredients using the more specific standardized common names in the 2000 edition. As noted previously, the 2000 edition reports that it has changed 140 names to improve specificity, accuracy, or both.

Additional consumers who would benefit are those who shop for dietary supplements containing botanical ingredients using: (a) One or more of the standardized common names that the 2000 edition of *Herbs of Commerce* has changed to improve accuracy or (b) one or more of the Latin binomial names that the 2000 edition of the *International Code of Botanical Nomenclature* has changed due to a better understanding about the taxonomic relationships between plants. These consumers shop for dietary supplements using the botanical ingredient names in the 2000 edition of *Herbs of Commerce* or stated in accordance with the rules in the 2000 edition of the *International Code of Botanical Nomenclature* but sometimes have difficulty finding those dietary supplements because the product labeling may use a name from or stated in accordance with previous editions of those texts. The direct final rule would reduce search costs for these consumers by reducing inconsistencies between the botanical names in the 2000 editions of *Herbs of Commerce* and the *International Code of Botanical Nomenclature* and the names used to refer to those botanicals on dietary supplement labels.

We do not know the number of consumers in each of these categories. Therefore, we again assume that the total number of consumers in all affected categories would be between 3

and 6 percent of the estimated 100 million consumers who used a dietary supplement containing a botanical ingredient in 1999, or 3 to 6 million consumers.

We also do not know the decrease in search costs that the consumers in each of these categories would experience. However, we estimate the possible range of total search cost reductions using three studies on consumer behavior. The first study recorded the amount of time people in drug stores spent looking at an item on the shelf before making a purchase (Ref. 11) and found that customers, on average, spent approximately 4 minutes studying a product before purchasing it. According to data from RTI, adult consumers bought an average of six units of dietary supplements containing a botanical ingredient in 1999. Therefore, this study suggests that consumers of dietary supplements containing botanicals spend an average of 24 minutes per year (six units per year x 4 minutes per unit) looking at these products on shelves before purchasing them.

The second study, called the Americans' Use of Time Project, used time diaries to study how over 3,500 adults spent their time (Ref. 12). This study found that adult Americans spent about 371 minutes per week shopping for personal consumption items in 1985, such as groceries and other household products. This study did not provide information on time spent searching specifically for dietary supplements. To estimate this time, we assume that the share of shopping time devoted to dietary supplements is proportional to the share of consumers' budgets spent on dietary supplements. According to an industry source and FDA projections, consumers spent about \$4.8 billion on dietary supplements containing botanical ingredients in 1999 (Ref. 13). Consumers spent \$6,250 billion on personal consumption in 1999 (Ref. 14). We do not know the personal consumption expenditures of people who specifically purchase dietary supplements containing botanicals. Therefore, we assume that the personal consumption expenditures of those consumers are 49 percent of the personal consumption expenditures of all consumers. We base this assumption on the estimate that 49 percent of adult consumers used such a supplement in 1999, and the assumption that those consumers spent about the same amount on personal consumption as did other consumers. Under these assumptions, we estimate on the basis of this study that consumers spend an average of 30 minutes per year $[(\$4.8 \text{ billion} \div \$6,250 \text{ billion} \times 0.49)] \times 371 \text{ minutes per week}$