

MONEY/TECHNOLOGY

HEALTH & SCIENCE

Are cigarettes addictive? Smokers can answer that

By John Schwartz
The Washington Post

Before he finally quit smoking 18 years ago, Charles R. Schuster recalled that after a day of leading smoking-cessation workshops, he would declare to his wife that he was finished with cigarettes — and dramatically fling his pack over the back patio into his garden.

"Two hours later," said the former head of the National Institute on Drug Addiction, "I would be out there with a flashlight, looking through the bushes."

Most people would say he was hooked. Yet there is no universal consensus on how addictive nicotine is, or at what level it becomes so.

Nicotine, one of nature's own insecticides, might seem an unlikely drug of choice. Nicotine is lethal to bugs, because it mimics the action of messenger chemicals that help animals' nerve cells communicate.

But as toxicologists are wont to say, the dose makes the poison. At the level offered by cigarettes, nicotine gives its fans a rush of pleasure, focusing the mind and relaxing the nerves.

The tobacco industry insists that smokers light up for pleasure, not to satisfy an addiction. Most medical experts, however, disagree.

So as the FDA explores the possibility of regulating tobacco products as drugs, Commissioner David A. Kessler has suggested that it might require cigarette-makers to ratchet back the levels of nicotine in cigarettes gradually over a decade or more to reach levels that are not addictive.

Finding that level may prove difficult, although nicotine is one of the more studied of drugs. Indeed, much of what we now know about the class of messenger substances called neurotransmitters derives from early experiments with nicotine.

In 1909 British researcher J.N. Langley found that nicotine, when applied to the part of a muscle that joins a nerve, could make muscle tissue contract. He realized that there must be a "receptive substance" at the neuromuscular junction that is responsive to chemicals like nicotine, and that the body must produce its own nicotine-like chemicals.

Later researchers found the body's nicotine-like neurotransmitter: acetylcholine, which is also released at the synapses, or points of connection, between two nerve cells.

When people use tobacco, nicotine enters the bloodstream and binds to receptors in place of acetylcholine. In the brain (which nicotine can reach by passing through its protective filter barrier) nicotine alters the messages sent between nerve cells — especially along the section of the inner brain known as the mesolimbic dopaminergic pathway, from which cravings seem to emerge.

The mesolimbic system responds to some pleasurable acts by producing the chemical dopamine, believed to reinforce the



good feeling within a part of the brain known as the nucleus accumbens.

Cocaine, like nicotine, enhances the effects of dopamine. It blocks the parts of the cells that soak dopamine back up, leaving more dopamine in the brain and over-stimulating the nucleus accumbens.

Nicotine could work on the same system, but it doesn't keep the body from soaking up its excess dopamine the way cocaine does; instead, it seems to tell the nerve cells to pump out more dopamine.

At the same time, steady smoking appears to deactivate the nicotine receptors, lessening the pleasant buzz. The body compensates over time by growing more nicotine receptors, and "once that pathology is set up, you end up in a little cycle that keeps you smoking cigarettes," said John Dani, a researcher at Baylor College of Medicine in Houston.

After the body has gone without nicotine for several hours, the receptors reactivate, hungrily clamoring for a fix. "You feel nervous, your hands are shaking — you feel awful. That's the reason the first cigarette of the day is reported to be the most pleasurable," Dani said. The smoker continues to puff throughout the day to keep the receptors quiet.

Does that cycle equal addiction? The surgeon general's re-

port of 1988 said it does. But the tobacco industry argues that it does not, at least in the common-sense meaning of the words.

James W. Johnston, chief executive officer of R.J. Reynolds Tobacco Co., said, "All you need to do is ask and honestly answer two simple questions. First, would you rather board a plane with a pilot who just smoked a cigarette, or one with a pilot who just had a couple of beers or snorted cocaine or shot heroin or popped some pills?"

"Second, if cigarettes were addictive, could almost 43 million Americans have quit smoking, almost all of them on their own without any outside help?"

The fact that millions have quit smoking doesn't negate nicotine's addictiveness, said Jack E. Henningfield, chief of National Institute on Drug Addiction's Clinical Pharmacology Branch. Many addicts walk away from alcohol, cocaine and even heroin.

"There is the notion that heroin is an all-or-nothing addiction, but nothing is further from the truth," he said. As many as 15 percent of heroin users never seem to become addicted at all — about the same percentage of non-addicted smokers, he said.

Most medical authorities have little doubt that nicotine fits the classic definition of chemical addiction. They have identified all the generally recognized hallmarks of addiction in smokers:

- New smokers develop a tolerance for nicotine, building toward an eventual plateau.
- They find it difficult to quit, even when aware of the health effects. Researchers have found that half of smokers who have had surgery for lung cancer resume their habits, and 38 percent of smokers who suffer a heart attack go back to smoking.
- Smokers who try to quit experience withdrawal symptoms such as irritability, anxiety, headaches and more.

U of I finds milk fortifier helps premature infants

IOWA CITY — For most babies, the concentrations of nutrients and minerals in breast milk makes it the perfect food for the beginning of life.

Unfortunately, for premature infants breast milk is not adequate to support their needs. In a new study, University of Iowa College of Medicine researchers are examining the effectiveness of a new fortified powder that is added to breast milk.

"We will be testing a newly developed fortifier that contains different amounts of protein, calcium, phosphorus and other nutrients," says Dr. Ekhard Ziegler, principal investigator of the study and professor of pediatrics. Without the additional nutrients, bones can become under-mineralized, which leaves them weakened and increases

the possibility of fractures.

Previous studies have shown that adding a fortifier improves the growth of premature infants. "Because premature infants grow at such a phenomenal rate, the nutritional needs of the premature baby are greater than what breast milk alone is capable of providing," says Ziegler, also a staff physician at the University of Iowa Hospitals.

Better nutrition in early life may also have life-long effects. "Later in life, children born prematurely can have developmental problems or trouble in school. We think some of these problems may be related to inadequate nutrition during infancy," Ziegler says.

The U of I was one of the first health care institutions to add fortifiers to breast milk to meet the specific needs of premature infants.

Co-investigators for the study include Dr. Edward Bell, professor of pediatrics, and Karen Johnson, June Miller, and Terrie James, staff nurses University Hospitals.

Heart: Obesity is a predictor

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that obesity in children is a predictor of both high cholesterol and, later in life, high blood pressure and elevated levels of calcified plaque.

"In examining the mothers, fathers, sisters, brothers and related aunts, uncles and cousins of such children with excess weight, it appears body weight obeys genetic laws," Lauer said. "About 36 percent of the population in the Muscatine study appears to be carrying a major gene for obesity."

Lauer said the Muscatine Project is now looking at genetic factors that contribute to the range of long-established coronary risk factors. Mahoney hopes to secure additional funding from the National Institutes of Health to study the levels of calcified plaque in the coronary arteries of the parents and other relations of those young adults already identified as having calcified plaque in their arteries.

"Obesity is the strongest, most consistent factor associated with elevated blood pressure, abnormally low high-density lipoprotein levels — the so-called "good" cholesterol — and less striking levels of low-density lipoprotein — "bad cholesterol," Mahoney said.

"These lipid levels, high blood pressure and obesity are all major risk factors for heart dis-

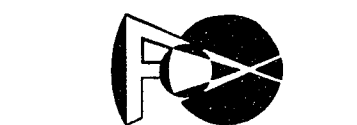
ease, but obesity is also perhaps the most modifiable risk factor," he said. "There are public health implications here."

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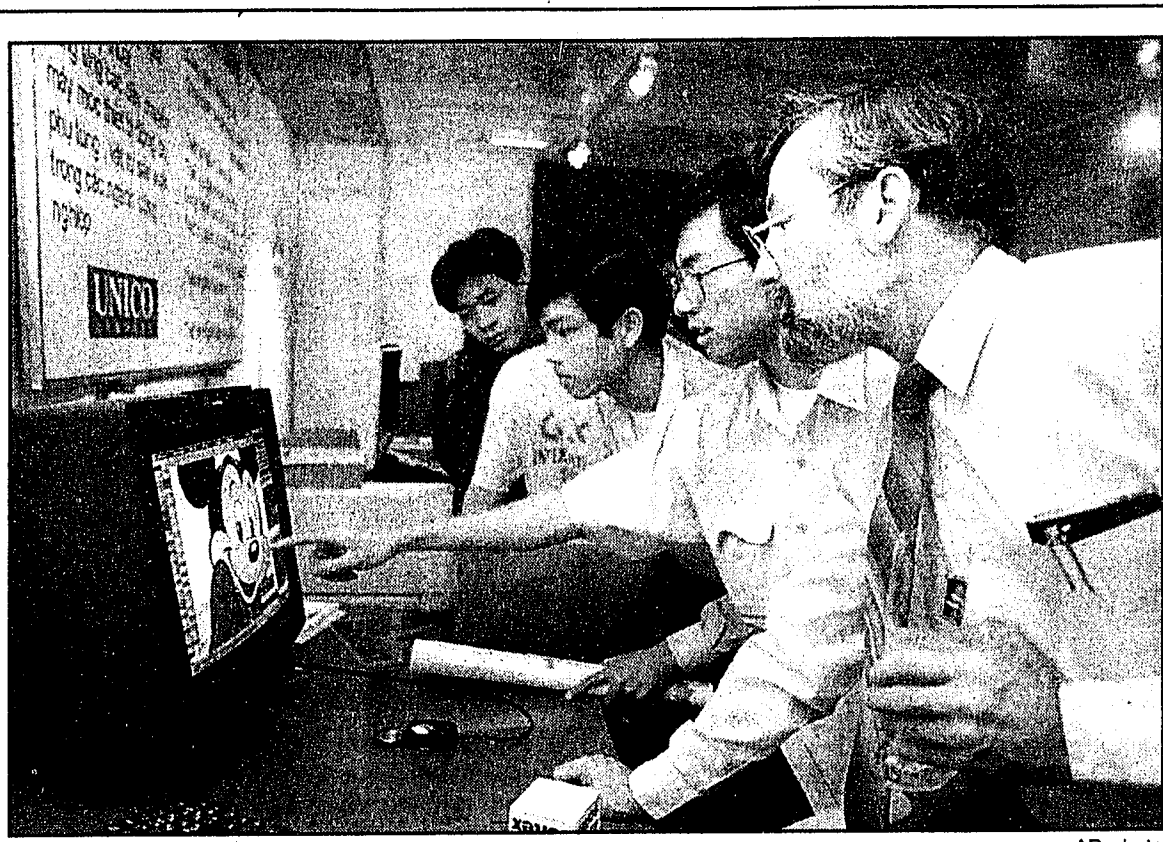
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High-tech fair in Vietnam

A Vietnamese visitor points to a computer screen as he talks to Jonathan Mayshar (right) of Scitex Israel about the system's computer graphics and applications. The two are taking part in the Hanoi International Fair for European Engineering and Production Machinery. About 421 companies from 15 countries are represented at the fair.

'Virtual secretaries'

Now you don't have to be organized

By Mark Potts

Special to The Washington Post

I'm not the most organized person in the world. For years, I did without a desk calendar, keeping appointments in my head or on little scraps of paper. My scruffy Rolodex was full of outdated names and phone numbers.

Once I finally got a personal computer for my desk at work, I was sure I'd change my disorganized ways. But I never was able to find an electronic organizer that suited me, so I kept addresses on a clunky old Hypercard stack and tried various date-book programs to keep track of my schedule.

Things got even more complicated as my computing went portable. I found myself keeping different schedules on my desktop machine, my laptop and my Newton — a device that, if nothing else, has a fairly good scheduler and address book built in.

I suspect my plight was hardly unique. Among the most booming products in PC software are programs that help people organize their lives.

What used to be called calendars and date books are now dubbed "personal information managers" — PIMs, for short — and are loaded up with enough features to make them virtual substitutes for secretaries. Most PIMs integrate the scheduling and address-book functions to allow users to link appointments with detailed information about the person they're meeting, help coordinate meetings among several people on a network, and update and synchronize information between laptop and desktop computers. And the best ones can be highly customized by their users to suit their needs.

Two recently released computer organizer software packages illustrate the strengths, and shortcomings, of the new breed of PIMs: Claris Organizer is a bare-bones model that eschews many bells and whistles (sometimes at its peril); Expresso, from Berkeley Systems — the company famed for its whimsical After Dark screen-saver program — piles on the features and gimmicks into an attractive but bulky package that may be too ornate for some users' needs.

The best thing about Claris Organizer is a feature it shares with its corporate cousin at Apple Computer Inc., the Newton: If you type "Lunch with Bob" into its calendar, it consults its

address book and offers you a choice of Bobs you can link to the appointment. Newton goes a bit farther — it knows that lunch is generally at noon, and schedules accordingly, and over time learns your habits and guesses that the Bob you want is the one you usually eat lunch with.

And Claris Organizer efficiently handles most of the other basics of organizers — allowing you to sort and group addresses and appointments, offering a great deal of flexibility in

how you enter information and sending reminders of upcoming appointments.

But Organizer disappoints in many other areas. It has a fairly ugly interface that's almost unchangeable by the user. It is not set up to run on a network, making it impossible to automatically coordinate schedules with others.

Berkeley Systems' Expresso, on the other hand, does all of the above, plus lots more. Maybe too much more. (It also is available for both Windows and Macintosh; Organizer is only for Macintosh.)

"What used to be called calendars and date books are now 'personal information managers,' loaded with enough features to make them virtual substitutes for secretaries."

EASTERN IOWA 43

EXCH COMPANY	TICKER SYMBOL	CLOSING PRICE		NET PERCENT CHANGE		P/E RATIO	ANNUAL DIVIDEND		52-WEEK	
		11/14/94	11/11/94	PERIOD IN	PERIOD IN		RATE	YIELD	HIGH	LOW
NYS Aegon	AEG	62 1/8	62 1/8	+1/2	+0.8	11	2.21	3.6	64	49
OTC AidCo	ALGR	27 3/4	26 1/2	-1 1/4	-4.5	6	.60	2.3	31	22 3/4
NYS ArchDn	ADM	27 3/8	28	+5/8	+2.3	17	.15	0.5	29 1/2	20 7/32
OTC BoatBn	BOAT	30 1/8	29 7/16	-1 1/16	-2.3	9	1.36	4.6	35	26 3/4
OTC BrenIB	BRBK	19 1/2	18 1/4	-1 1/4	-6.4	11	.44	2.4	20 1/2	17 1/2
NYS Cysare	CYS	12 1/4	11 7/8	-3/8	-3.1	11	2.20	3.2	13 3/4	7 3/4
NYS Deere	DE	69	69 1/4	+1/4	+0.4	11	1.60	3.5	90 7/8	64 1/2
NYS Ekodak	EK	47	45 3/4	-1 1/4	-2.7	16	1.60	3.5	54 1/8	40 1 1/16
NYS EotIowa	EIC	33 1/2	33 1/2	-	-	11	.48	1.4	39 1/4	29
NYS Fstar	FSR	29 1/4	d28	-1 1/4	-4.3	9	1.20	4.3	35 1/2	28 1/2
OTC Flexstl	FLXS	10 3/4	11	+1/4	+2.3	12	.48	4.4	18 1/2	9 1/2
NYS GenEI	GE	48	48 3/4	+3/4	+1.6	15	1.44	3.0	54 7/8	45
NYS GmMills	GIS	57 1/4	56	-1 1/4	-2.2	20	1.88	3.4	63 1/8	49 3/8
NYS Gillete	G	72 1/2	71 3/8	-7/8	-1.2	32	1.00	1.4	74 7/8	57 3/4
NYS Grace	GRA	40 1/8	39 3/8	-3/4	-1.9	14	1.40	3.6	46 3/4	37 1/8
NYS Hansn	HAN	18 1/8	18 1/8	-	-	13	1.10	6.0	22 1/2	17 5/8
OTC HawkB	HWKB	20	18 3/4	-1 1/4	-6.3	11	.52	2.8	21 3/8	17 1/2
OTC HrtInd	HTLD	29 3/8	30 7/16	+1 1/16	+3.6	38			36 3/4	23 1/2
OTC HonInd	HONI	26	26	-	-	15	.44	1.7	34	24
NYS IES	IES	25 1/4	25	-1/4	-1.0	10	2.10	8.4	31 3/4	24 3/4
NYS IntPap	IP	71 5/8	72 3/4	+1 1/8	+1.6	25	1.68	2.3	80 1/2	60 5/8
NYS Iowallg	IWG	20 1/8	19 5/8	-1/2	-2.5	10	1.73	8.8	25 1/4	19 1/4
NYS LongvF	LFB	16 3/8	16 1/2	+1/4	+0.8	28	.52	3.2	23 3/8	16 1/4
NYS Maytag	MYG	15 3/4	15 1/2	-1/4	-1.6	11	.50	3.2	20 1/8	14 7/8
OTC MCI	MCIC	22 3/8	21 3/4	-5/8	-2.8	17	.10	0.5	29	21 3/8
NYS Moore	MCL	17 3/8	17 3/8	-	-	9	.94	5.3	20 7/8	16 1/4
OTC NashF	NAFC	16	15 1/2	-1/2	-3.1	10	.72	4.6	19 1/2	15 1/2
OTC NICptr	NLCS	14 1/4	15	+3/4	+5.3	10	.36	2.4	15	10 1/4
OTC Norand	NRND	38 3/8	38	-5/8	-1.6	28			40	23 3/4
NYS Norwst	NOB	23 1/2	23 1/4	-1/4	-1.1	10	.84	3.6	28 1/4	22 1/4
OTC Penwst	PENW	21 3/4	22 1/2	+3/4	+3.5	26	.20	0.9	26 1/2	17 1/2
NYS ProciG	PG	61 3/4	62	+1/4	+0.4	19	1.40	2.3	64 5/8	51 1/4
NYS QuakrQ	OAT	68 1/2	67 3/8	-7/8	-1.3	23	2.28	3.4	85	61 1/8
NYS RalcpHd	RAH	20 1/4	21 1/8	+7/8	+4.3	13			21 7/8	13 1/2
NYS Rayfhn	RTN	63 1/2	64 3/8	+7/8	+1.4	15	1.50	2.3	68 7/8	59 1/8
NYS Rockwl	ROK	35 1/2	35 3/8	+1/8	+0.4	12	1.08	3.0	44 1/8	33
NYS Tanger	SKT	21 1/8	21 1/8	-	-	15	1.84	8.7	34 3/4	20 7/8
OTC UFireC	UFCS	42	40 1/2	-1 1/2	-3.6	9	1.08	2.7	44	36
AMX USCell	USM	32 1/4	32 1/2	+1/4	+0.8	14	2.00	3.4	35 1/4	22 3/8
NYS UnTech	UTX	61 1/8	59 1/2	-1 1/2	-2.7	14	2.00	3.4	72	58
NYS WalMI	WMT	23 3/4	23 3/8	-1/8	-0.5	22	.17	0.7	30 1/2	22 3/8
NYS Weyerh	WY	38 1/2	38 1/8	-3/8	-1.0	16	1.20	3.1	51 1/4	37 3/4
OTC Yonk	YONK	19	18 7/8	-1/8	-0.7	13			26 1/4	12 1/4

(U) New high in period (D) New low in period

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