



Needham Board of Health

REVISED AGENDA

Friday April 13, 2018

7:00 – 9:00 a.m.

**Charles River Room – Public Services Administration Building
500 Dedham Avenue, Needham MA 02492**

- 7:00 to 7:05 – Welcome & Review of Minutes (March 9th)
- 7:05 to 7:40 – Staff Reports (March)
- 7:40 to 7:50 – Project Update – Food Code Adoption and Vendor Training
- 7:50 to 7:55 – Project Update – Rosemary Recreation Complex
- **7:55 to 8:00 – Tobacco Compliance Check Update**
- 8:00 to 8:10 – Discussion of Revised Trash Hauler Regulations
- 8:10 to 8:20 – Policy Discussion – Town Meeting Warrant Articles
- 8:20 to 8:35 – Review & Discussion – Radio Frequencies & Health Impacts
- 8:35 to 8:55 – Continued Discussion: Goal Setting for FY 2019 and FY 2020
- 8:55 to 9:00 – Other Items
- Next Meeting (tentatively Friday May 11th 7:00 – 9:00 a.m.)
- Adjournment

(Please note that all times are approximate)

**Needham Board of Health
Meeting Minutes
March 9, 2018**

Board: Edward V. Cosgrove, Ph.D.; Stephen Epstein, M.D., M.P.P., Vice-Chair; and Jane Fogg, M.D., M.P.H. Chair.

Staff: Timothy Muir McDonald, Tara Gurge, Diana Acosta, Donna Carmichael, Maryanne Dinell, Dawn Stiller, Catherine Delano

GUESTS: Michael Dundas, Chief Executive Officer of Sira Naturals
Ashlyn Plunkett, Retail Operations Manager for Sira Naturals
Felix Zemel, Needham resident
Kathleen Ward Brown, Needham resident

Convene: 7:00 a.m. – Needham Golf Club, 49 Green St. Needham, MA 02492

Approve Minutes

Dr. Cosgrove made a motion to approve the previous' meeting minutes. Dr. Epstein seconded the motion. Upon motion duly made and seconded, the minutes of the February 9, 2018 meeting were approved. **The motion carried. The vote was unanimous.**

Staff Reports

Senior Substance Use Prevention Coordinator - Catherine Delano

Ms. Delano mentioned that the Youth Diversion Program Coordinator Position was recently posted, and it closes March 16. The Diversion Program is a cooperative initiative between Police, Public Health, and Youth & Family Services. Ms. Delano continues to do clinical work with Youth and Family Services for the students referred by the High School for substance use violations. The Substance Prevention Alliance of Needham's (SPAN) website is almost finalized. And the coalition is excited about a public education event, *Hidden in Plain Sight* and *Vaping Explained*, which will occur at Pollard Middle School on March 22

Traveling Meals Coordinator Report, Maryanne Dinell

Ms. Dinell reported that there were no severe weather conditions in February which negatively impacted the Traveling Meals Program. But due to the weather forecast of an impending snowstorm of 4-8 inches or more of snow fall in Needham on Wednesday, March 7th and through the evening into the morning hours of Thursday March 8, meal delivery on Wednesday included the meals that would have gone out on Thursday.

The volunteers for Thursday were able to change their personal schedules and arrived at the hospital along with Wednesday morning volunteers to pack and deliver meals for two days. Prep, packing and delivering of a next day's meal is very much doable if the

hospital has the staff and volunteers are available. Meals were only ½ hour behind schedule.

Mr. Ming Cheung, the Clinical Nutrition Manager at Beth Israel Deaconess Hospital Needham, mentioned to Mr. McDonald that his grandmother was on the Program and he is committed to supporting our efforts. He was able to have the BI Hospital install a cabinet, in the Traveling Meals set-up area, that houses supplies and any personal possessions of volunteers, as they work. This storage unit will help limit the Traveling Meals Program's volunteers repeated entry into the kitchen which helps with the safety issues and will also free up space that will be used for the kitchen's own storage needs.

Mr. McDonald offered information about an administrative item. The Certificate of Necessity that justifies the hiring of summer employees for the Traveling Meals Program has hit a glitch. In the years past, the Health Division has never had a problem with submitting and filling out of this paperwork for approval. This job posting covers two (2) fiscal years, the last week in June, 2018 and into the new fiscal year budget starting July, 2019. Mr. McDonald explained the appropriation process; slightly new rule with a new process but same staff.

Public Health Nurse Report, Donna Carmichael

Ms. Carmichael reviewed the communicable disease report. Needham had Influenza and GI outbreaks in two of the major assisted living facilities in town. The facilities have worked with the public health nurses to comply with prevention of spread of the disease. The complicating factor with assisted living as well as memory care is that there is no specific medical director to sign orders of prophylaxis when needed. That makes for the facility having to call families as well as specific PCP's for medicine prescriptions. This unfortunately wastes valuable time to prevent illness.

Dr. Epstein and the Board suggested a meeting in the spring with facilities management as well as elder care services who oversee assisted living facilities for the State of Massachusetts.

Dr. Epstein was concerned with Riverside involvement at BID Needham Emergency Room geriatric patients. Geriatric psyche patients apparently have been waiting for placement for days and now are being admitted to the medical floor of the hospital. There is a lot of frustration with placement of these patients. Ms. Carmichael said she was having a meeting with the CCIT (Community Crisis Intervention Committee) and Riverside emergency services will be there so she will ask what they think is going on.

Ms. Carmichael stated the public health nurses have started camp applications. There will be new regulations coming out by the state and we will review with each camp when they come out.

Assistant Director Report, Ms. Tara Gurge

Ms. Gurge has been busy conducting site visits with Ms. Acosta checking setbacks for new Animal Permits (for chickens). They met with Animal Control Officer David

Parsons, and will be following up with him this spring for final animal permit inspections.

Ms. Gurge is working with Capella's owner (former Petit Robert restaurant), on conducting a plan review of proposed new kitchen/bar area. Ms. Gurge and Ms. Acosta performed an initial walk through. Ms. Gurge and Ms. Acosta observed the kitchen and bar areas, which were in the process of being gutted to allow for the installation of new equipment. They also verified the placement of the existing hand sinks to ensure those were still in place and not being removed. Ms. Gurge and Ms. Acosta will be conducting additional follow-up inspections as they get closer to opening, which is planned for this coming April.

Stacy's Juice Bar is proposing to install coffee and espresso equipment, etc. Stacy's Juice Bar is also proposing to offer more open food/drink items. Ms. Gurge and Ms. Acosta conducted a site visit with the Town Building Commissioner and Plumber to determine if a grease trap is needed to be installed on site in order to accommodate this additional proposed equipment.

Ms. Gurge is in the process of overseeing Toll Brothers, Modera, Homewood Suites, and Rosemary Pools; the latter in reviewing all required pool signage which needs to meet MA Pool Code standards. The draft pool signage has been submitted for review. The final signs and follow-up pool permit requirements are still in process.

Environmental Health Agent Report, Ms. Diana Acosta

A customer called to say that they ordered an egg roll at a Needham restaurant and instead the restaurant brought the customer a chicken wing. The server took back the chicken wing and placed the egg roll on the used plate on the table where the chicken wing was. The customer was unsure if the chicken wing was disposed of properly. The customer also stated that they saw food prep in dining area instead of kitchen where there was a "pile of string beans" out in the dining room. Ms. Acosta spoke to the owner to remind staff that all food prep occurs in kitchen only. The owner also confirmed the chicken wing was disposed of in the kitchen and not reused. This restaurant has had a history of food prep outside of the kitchen.

A nuisance call came in regarding loose trash from bins at a residence. A neighbor complained about loose trash and barrels being stored on the street. Ms. Acosta spoke to the owner of the property who had previously spoken to the wife about over stuffing the bins. Ms. Acosta conducted a site visit on March 6th and confirmed there was no trash debris on or around the property. The only outstanding issue is the barrels were not pulled up to the house and were at the end of the driveway. Ms. Acosta originally believed that the initial complaint was regarding a home where hoarding occurred in the past but it has been confirmed that the complaint was about a neighboring property.

Assistant Director, Ms. Gurge and Environmental Health Agent, Ms. Acosta, had a discussion of pests/trash along Railway between Sudbury Farms and Knights of

Columbus. Sudbury Farms, Dunkin Donuts and Subway instituted more trash collection and weekly pest control. The restaurants arranged for more trapping for pest control. Ongoing monitoring pest control along with garbage pickup is being conducted at these food establishments.

Dr. Cosgrove asked about MBTA have they been increasing their trapping schedule. Dr. Cosgrove stated that burrows are clearly visible. Dr. Cosgrove also asked about more leaf pick up. Ms. Gurge stated that it is hard to schedule leaf debris pick-up around the train schedule and their MBTA contact has to deal with fourteen unions. Ms. Gurge will keep this leaf debris removal as a priority. Ms. Gurge and Ms. Acosta are documenting EHS Pest burrows on photos and going back to their contact so the contact can work with the various unions.

Ms. Acosta, had a mobile food truck meeting with 10 potential vendors and worked with the Town Manager's Office to have a streamlined application process. Packets are in process and there is strong interest. The Health Division is treating the food trucks with the same strict food review process that we require of all restaurants.

Ms. Acosta stated she is following up on the occupancy permit requirements for Modera.

Medical Marijuana Regulations and Sira Naturals RMD

Mr. McDonald introduced the guests from Sira Naturals, Medical Marijuana Providers, Michael Dundas and Ashlyn Plunket. Mr. Dundas thanked the Board and noted Sira also operates in Cambridge and Somerville. Mr. Dundas stated that State Law requires registered medical marijuana dispensaries to be fully vertically integrated between growing and distributing/selling operations. For Sira Naturals, their manufacturing plant is located in in Milford, MA.

Ms. Gurge stated that Mr. Dundas proposes a discount for seniors and veterans at their Needham facility; Sira does not deliver so if a Needham resident wishes to receive these categorical discounts they must travel to Cambridge or Somerville. Mr. McDonald stated that this meeting was to introduce the topic and the Board can ask more questions and obtain more details at a future meeting.

Mr. Dundas raised an expanded agenda for the next meeting regarding the Board of Health Medical Marijuana regulation which states no free samples or coupons for cannabis products; no buy one get one free sales arrangement. Mr. Dundas made the argument that the regulation doesn't apply in the same way to medical marijuana because a physician has proscribed the medical cannabis/class of people is constrained by the prescription/physician visit. Medical marijuana is not covered by medical insurance so it is relatively expensive.

The Board also discussed evidence-based practices; physicians currently prescribing medical marijuana are not primary care physicians in regular practices but rather are

stand-alone practices whose sole work is to proscribe medical marijuana. Also a discussion of the role of discounts versus lower overall pricing also occurred.

A discussion also ensued on the design behind Needham's medical marijuana laws including setting the regulation guidelines as a combination of a tobacco, food and pharmaceutical product making it the toughest regulation in the State. The Board thought a discussion of recreational marijuana and the regulations will occur later than the April meeting.

Mr. Dundas will provide the Board with sales information especially the effect of the ticket price changes. Also any information available from other states. A copy of the regulations in Cambridge and Somerville will be distributed to Board members.

Mr. McDonald noted that he is not sure if is the Boards role to promote something or demote how something is handled and recommended further discussion from both the public policy and public health angles in April and May. If there is interest after those discussions we can draft language for a regulation change and that regulation change is subject to a public hearing.

BOARD REORGANIZATION

Generally, Vice Chair is voted to become Chair, Member/Secretary becomes Vice Chair and whoever is elected in the upcoming Town Election becomes the Member/Secretary for the Board of Health.

Dr. Cosgrove made a motion to reorganize the Board along traditional lines, with Dr. Epstein assuming the role of Chair and Dr. Cosgrove assuming the role of Vice-Chair. Chair Fogg seconded the Motion. The motion carried. The vote was unanimous in favor of the traditional reorganization. New Board Member will be announced shortly after the April 10th election. (Felix Zemel and Kathleen Ward Brown are running for the seat)

Chair Fogg discussed that the Public Health Division had an open hearing for the Food Code Adoption; the division has slides and a presentation which was helpful. All requested changes were made on the slides.

Needham resident Felix Zemel spoke — He commended the Board on the food code rewrite; the rewrites enables a food paradigm shift making the relationship between food handlers, food establishments, and the Board of Health a communicative and collaborative relationship to the benefit of all concerned.

Ms. Acosta has had at least 15 establishments who have responded to the food training program so far for the Food Code Adoption – which will be enacted July 1, 2018.

Dr. Cosgrove makes the motion to approve the Food Code Adoption; Dr. Epstein seconded the motion. The motion carried and the vote was unanimous. Mr. McDonald has all Board members sign the required voting papers.

OTHER ITEMS

Mr. McDonald has CDC tech vendor meeting this afternoon; Mr. McDonald is cautiously optimistic; we have a work around that might work for both of us.

Ms. Carmichael and Ms. Zike are working with Ms. Dunnell on open houses for baseball and soccer; coaches' night in two weeks; revised materials for concussion understanding. It was nice that they called us to speak with coaches and parents. Dr. Epstein noted that national governing bodies have been pushing concussion understanding now and it was great for Board of Health that coaches invited us.

Mr. McDonald updated the Board on drug disposal kiosks in a cost share with BEI Needham. BEI is looking for a cost share in low four figures which we can potentially support. Good reasons to have drug disposal places in more than one place. Some people are reluctant to dispose of drugs in the lobby of the police station. The other advantage is that the hospital will assume the not inconsiderable maintenance costs including bag liners, collection and disposal of \$2000.00 per year. Mr. McDonald also noted that he would love to have it at the RTS; security reasons make that difficult. Also working with CVS and Walgreens; we are doing a case justification plan for each of their managers. Cautiously optimistic that they will be on board...each site will collect less but the public health goal of more collection overall will occur.

GOALS

Mr. McDonald--We adopted 17-18 part way through fiscal 17; we want to be more prompt in adopting goals for fiscal 19 and 20. At a future meeting we update the Board on status of previous goals. He asked the Board and the staff to review the goals.

In April a more in depth discussion including accomplishments, areas to work on in existing goals, and devising a goal that vaccinating as much as possible is an overall goal of the Public Health Department especially in the areas that lack flu shot access. I am recommending this goal as the finance committee questioned why we didn't charge for the flu shots at North Hill and Charles River. Dr. Epstein would like to discuss a goal of a limit on the total additive signal effect from all providers that residents are exposed to.

Mr. McDonald thanked Chair Fogg for her service.

Chair Fogg reflected back on her service and how much it has brought her back to her public health roots. It has also made her a medical marijuana expert. She would stay on if not for aging parents and needing to be near them. She hopes to visit the department in its new office at Rosemary.

Mr. McDonald also raised the issue of needing to fund the part-time emergency management position from discretionary and grant funds. This month we had power outages on the weekends and it would be helpful to have a staff person available then. Also need to check on generator at the high school which failed but the high school is the

designated warming center for senior citizens. He recommends the emergency scenario test in a shelter situation as it has only been tested in the office setting.

Mr. McDonald also noted that we have emergency management volunteers; No CERT team. Liability issues with volunteers; Needham covers the volunteers if they are being directed by Mr. McDonald or Ms. Carmichael or Ms. Zike even when they are out of town.

Adjournment -

Upon motion duly made and seconded, that the March 9, 2018, BOH meeting adjourns at 8:30 am.

The motion carried. The vote was unanimous.

Next meeting is scheduled for Friday, April 13, 2018, in the Charles River room at the Public Service Administration Building 7:00 a.m. to 9:00 a.m.

Respectfully submitted by: Faith Crisley, Recording Secretary

Needham Public Health Department
 March, 2018 Monthly Report
 Maryanne Dinell- Traveling Meals Program Coordinator

Monthly

<i>Description</i>	<i>Reason</i>	<i>Notes/Follow-Up (ongoing, completed, etc.)</i>
Month of March, 2018	Residents of Needham, needing help with their daily meals.	45 clients on the Traveling Meals Program 32 Springwell Elder Services, Waltham clients 13 private pay clients - Needham residents
687 2- meal packages were delivered in March, 2018	28 Clients receive meals 5 times a week 15 Clients receive meals 3 days a week 2 Clients receive 7 meals within 5 day period	519 meals delivered to Springwell Clients 168 meal delivered to private pay residents Total #687 meals delivered @ 5.50 per meal =cost of \$3778.50
6 new clients on the Program	3 are Springwell consumers 3 Private Pay	1-Living conditions are questionable-Building Dept. involved 3 expected to be long term 2 expected to be short term
2 Clients no longer need Program	2 able to be on their own	able to drive, shop and prepare meals

<i>Category</i>		<i>Jul</i>	<i>Aug</i>	<i>Sept</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>FY '17 Total</i>	<i>FY '18 Total</i>	
Meal Delivery		653	718	644	619	577	674	601	605	687				8460	5778	
General Telephone Calls-received		35	30	36	35	60	74	102	45	49				811	466	
Assistance Calls-to Springwell		2	1	3	2	8	4	2	4	6				40	32	
Not at home at delivery		2	3	5	2	4	2	1	4	3				36	26	
911		0	0	0	0	0	0	0						2	0	

<i>Category</i>		<i>Jul</i>	<i>Aug</i>	<i>Sept</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>FY '17 Total</i>	<i>FY '18 Total</i>	

Meetings, Events, and Trainings

<i>BI</i>	<i>Type</i>	<i>Description/Highlights/Votes/Etc.</i>	<i>Attendance</i>
Board of Health Meeting		Monthly meeting held at PSAP	Staff and Board Members

Donations, Grants, and Other Funding [List any donations received, grants funded, etc. over the past month.]

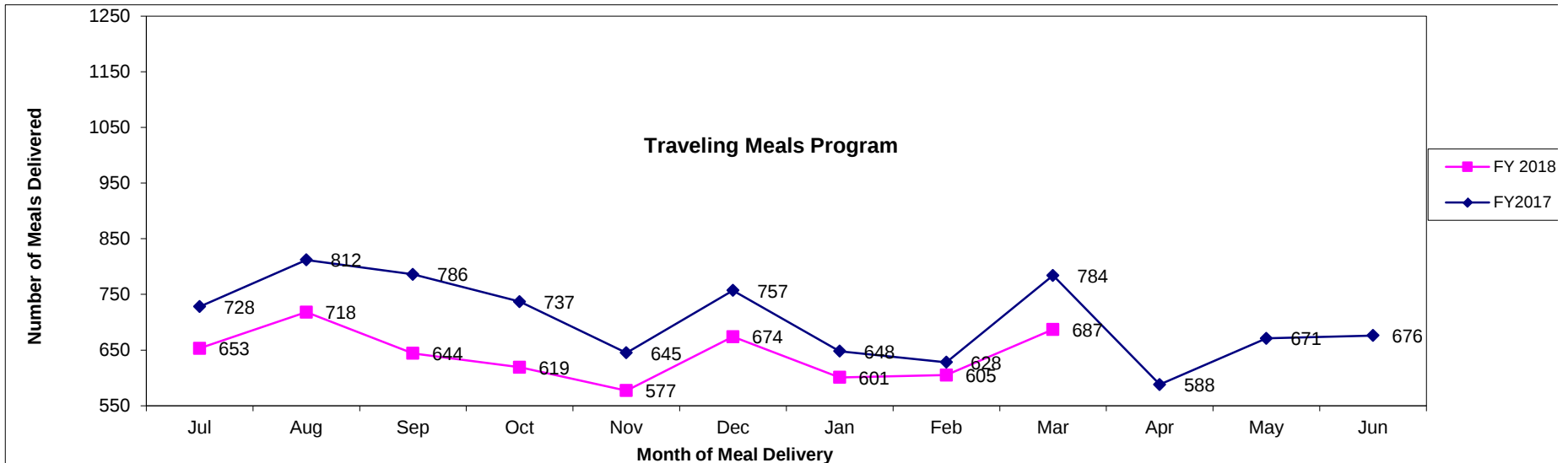
<i>Description</i>	<i>Type (D,G,O)</i>	<i>Amount Given</i>	<i>Source</i>	<i>Notes</i>

Traveling Meals Program

March, 2018 FY 18

Projected-12 Mo.	
\$	4,788.67
#	7,704

Month	# Meals FY2017	# Meals FY2018	FY18 Cost	% Change # Meals
<u>Jul</u>	728	653	\$3,591.50	-10%
<u>Aug</u>	812	718	\$3,949.00	-12%
<u>Sep</u>	786	644	\$3,542.00	-18%
<u>Oct</u>	737	619	\$3,404.50	-16%
<u>Nov</u>	645	577	\$3,173.50	-11%
<u>Dec</u>	757	674	\$3,707.00	-11%
<u>Jan</u>	648	601	\$3,305.50	-7%
<u>Feb</u>	628	605	\$3,327.50	-4%
<u>Mar</u>	784	687	\$3,778.50	-12%
<u>Apr</u>	588			
<u>May</u>	671			
<u>Jun</u>	676			
Totals:	8,460	5,778	31,779.00	



Substance Use Prevention and Education ~ Initiative Highlights

Needham NPHD, Needham SPAN and Substance Abuse Prevention Collaborative (SAPC) grant* collaboration with the towns of Dedham, Needham, Norwood and Westwood.

SAPC grant

Town coalition meetings:

Dedham Prevention coalition: March 6th Dedham Town Hall 6:00pm

Impact Norwood coalition: March 14th meeting cancelled- Snow

Westwood Cares coalition: March 29th meeting -Westwood High School 10:00am

Needham SPAN coalition: No March meeting scheduled

SAPC program, capacity building and strategy implementation preparation:

(1) SAPC Youth Engagement resume review, interview question draft, outreach to candidates, schedule interviews (2) Write hiring memo Emily Sanders, BUSPH MPH candidate June 2019 (3) DFC grant narrative and budget narrative review and edit (4) Promote Prevent Commission workgroup: feedback and edits to prevention coalition segment (5) Alcohol Compliance check meeting planning Chief Bill Brooks, Norwood (6) Marijuana forum collaboration: Braintree, Avon, Stoughton and Ashland: May 17th

SAPC Leadership Team meeting: March 19th Review and discussion of action plan initiatives and upcoming prevention events: (1) Alcohol Compliance and Environmental Scan initiative, Chief Brooks Action Team meeting planning. (2) AlcoholEdu for High School students, town updates (3) SAPC alcohol policy project including alcohol regulations and compliance check program (3) Dedham Public Health DFC grant application, *submitted by Jessica Tracey March 29th* (5) Youth Engagement coordinator, resume review, feedback request.

SAPC Youth engagement resume review: March 2nd Review Youth Engagement part-time position application packet and identify interview candidates, Tiffany Zike, Public Health nurse.

Drug Free Communities (DFC) grant application planning: March 1st and March 6th Jessica Tracy. RFP components focus: CIA member commitments, Community overview, narrative questions and budget narrative outline including in-kind match. Scope of 5 question content, including data collection and, action plan formulation.

Pediatrician project: March 5th Dr. Lester Hartman and Carol O'Neil, Practice Manager Westwood – Mansfield Pediatrics. Review practice protocols related to substance use and mental health screenings, youth and parent communication content, protocols for well visit prevention and education and Behavioral Health program parameters offered. Options for collaboration with town prevention coalition managers to develop age appropriate conversation templates ages 2 years- 18 years targeting substance use, mental health conditions and family communication patterns. Lyn Frano, Braintree, Amanda Decker, Avon, Amy Turncliff, Ashland, Jessica Kuhn, Stoughton and Liz Parsons, Melrose.

SAPC Youth Engagement interviews: March 6th and 7th. Five (5) candidate interviews with Tiffany Zike, Public Health nurse.

BSAS- MassTAPP Alcohol policy work group: March 6th Present SAPC alcohol policy initiative to Andy Robinson, BSAS- SAPC grant Contract Manager. (1) Alcohol regulation templates (Section 12 & Section 15) draft six (2) compliance check protocols (3) capacity building strategies for alcohol policy tool kit. SAPC Program Managers Liz Parsons, Melrose SAPC, Heather Warner, Northampton SAPC in collaboration with DJ Wilson, MMA, MassTAPP/EDC consultant, Tracy Desovich, MPH and Ilana Gerjuoy, Franklin County Regional Council, MassTAPP Technical Assistance providers.

SAPC capacity building: March 14th Maureen Doherty, Program Assistant. Review SAPC action plan targeting cluster town Community Awareness campaign poster distribution timeline. Youth Engagement intern hiring process and SAPC expense report components.

DFC grant RFP components action: March 15th, 16th, 21st, 28th and 29th Jessica Tracey, Cathy Cardinale, Public Health Director. Review and edit RFP components including narrative, budget narrative, CIA final drafts and HHS Standard Forms. Assist in grants.gov review and eRA Commons ASSIST online system logistics for submission March 29th.

Norfolk County Prevention Directors; March 15th Steph Patton, Lyn Frano and Amanda Decker and Jessica Kuhn (1) Pediatric practice project planning, March 5th meeting Westwood Pediatrics (2) Marijuana access, evidence based strategies- options for educational forum May 17th *The Impacts of Marijuana: Tools for Municipalities to Address Health, Social, and Legal Issues*. Presentations by: John Scheft, public safety, law enforcement implications, Chief John Carmichael, emerging trends, Cheryl Sbarra, MAHB, tools for boards of health and intersections with tobacco laws. Katherine Laughman, Municipal Law Kopleman & Paige, Jody Hensley and Dr. Amy Turncliff, youth health implications- adolescent brain development. (3) Prevention partnership expansion, statewide collaboration on access to alcohol and marijuana with Liz Parsons, Melrose and Amy Turncliff, Ashland.

Community Anti- Drug Coalitions of America (CADCA) Technical Assistance: March 15th & 18th *Conference calls* Dave Shavel, Trainer. Review and discussion of SAPC cluster capacity building strategies, action plan implementation and targeting sustainability. Dedham coalition overview, Jessica Tracey, Dedham Public Health Department.

SAPC Youth Engagement: March 21st. Emily Sanders, BUSPH intern. New hire meeting, protocols for Human Resources, NPHD overview part time staff expectations, SAPC program mission, funding, Strategic Plan components and Photo Voice project introduction.

Promote- Prevent Commission: March 26th Commission presentation of final report: *Behavioral Health Promotion and Upstream Prevention*. 22 commissioner remarks on report content, process, collaboration with local and state partners and prevention coalitions. Action: Outreach to local legislators to request co-sponsorship on legislation to create a permanent promote- prevent commission. Rep. James Cantwell, House Chair, 4th Plymouth, resignation, joining Senator Edward Markey staff.

MA Department of Public Health DPH conference: March 27th *Ounce of Prevention 2018: Working Together for Healthier Communities* Keynote address: Larry Cohen, Founder, Executive Director Prevention Institute: *Promoting the Power of Prevention in a Changing Climate*. Monica Bharel, MD, MPH Commissioner of Public Health: Healthy Communities Principles, Community Initiatives, LLC. **Workshops:** Using a Trauma Informed Approach to Prevent Youth Substance Misuse | The Role of Community Based Organizations in Making Clinical- Community Linkages Work: Lessons learned from the Prevention and Wellness Trust Fund (PWTF) DCU Center, Worcester, MA

NPHD programs meeting preparation outreach for research and resource gathering: (1) NPHD monthly report (2) CCIT core meeting follow-up confidentiality and operational protocols: Karin Orr, LICSW, MDPH and Kathleen Cahill, MA DMH, LICSW. CM Area Forensic Director.

NPHD – SPAN initiatives:

Community Crisis Intervention Team (CCIT): March 14th Core Team meeting, Needham Police Department. Lt. Chris Baker, Donald Anastasi, Donna Carmichael, Tiffany Zike, Eddie Sullivan, Jessica Moss, Kerry Cusack, John McGrath and Ben Gross Riverside EST.

Town Accountant: March 19th Conference call SAPC financial reimbursement submission Virtual Gateway system (February 2018 expenses) Michelle Vaillancourt and Dawn Stiller.

Health Division policy meeting: March 20th Lynn Schoeff, Review and discussion of Health Division policies including: Developing/administering surveys, reporting survey results, Coalition projects, Focus groups, Key informant interviews, Confidentiality, Student interns, Referrals for treatment, Confidentiality and Student Interns.

Newton Wellesley Hospital: March 20th Community Agency meeting. Facilitated by: Lauren Lele. Agenda: (1) NWH Nurse patient to staff ratio review (2) All of Us, NIH research precision medicine initiative managed by Dr. Susan Edgman- Levitan, Executive Director Stoeckle Center for Primary Care Innovation and Helen Hemley, Coordinator (3) Erin Miller, Manager NWH Domestic Violence /Sexual Assault Program: Elder Abuse Later in Life and Information sharing on current resources and programs. Public Health Departments: Needham- Wellesley, Waltham and Newton.

Needham Council on Aging: March 20th Social work week luncheon. Keynote: Hope Haslam Straughan Wheelock College, Dean School of Social Work Leadership and Youth Advocacy. The role and responsibilities of Social Workers and Case Managers in socially turbulent times.

Organizing for Change Podcast: March 22nd Amanda Decker, Avon DFC coalition. *Community level prevention experiences, impacting youth access to alcohol and other drugs.*

NPHD Staff meeting: March 22nd Review and discussion of division updates: Rosemary office update, staff progress reporting, review of Board of Health goals and update on the accreditation process with required components.

Needham Community Forum: March 22th *Vaping Explained*. Presentations by: Needham High School Principal Aaron Sicotte, School Resource Officer Ryan O'Leary (NIDA science and data on electronic cigarettes/vaping) Tamatha Bibbo, Pollard Principal Moderator. Hidden in Plain site exhibit featuring a mock bedroom with teens that mimic standard use products containing hidden compartments to conceal alcohol and other drugs. *Parents explore and learn about hidden compartment items and familiarize themselves with the clues to help determine whether their child might be experimenting with or using drugs or alcohol.* Presented by Substance Prevention Alliance of Needham (SPAN) Catherine Delano, MPH, Director, Needham Parents Care, and Beth Israel Deaconess Hospital-Needham.

Needham community capacity building: March 26th Denise Garlick, 13th Norfolk District Mental health and substance use disorder awareness and advocacy in Massachusetts and as related to Needham, Dover and Precincts 1 and 2 in Medfield.

Community outreach and support:

Resident Support: Respond to calls or meeting requests related to mental health conditions and/or substance use disorder. Referral to counseling, assessment, treatment and recovery resources. 2 requests: 1) Opioid treatment inpatient; 2) Alcohol post treatment Peer recovery support resources

Snow closure (1) March 13th
Vacation (2) March 8th & 9th

Respectfully submitted by Carol Read April 9, 2018

*SAPC technical assistance calls, coordinator meetings, and compliance related to the SAPC grant program are extensively documented in the BSAS-SAPC online quarterly reports.



Needham Public Health Division



Accreditation Update

April 3, 2018

Lynn Schoeff

1. In her role as Accreditation Coordinator, Lynn Schoeff attended a “think tank” at the Public Health Accreditation Board (PHAB) office in January 2018. The meeting was cohosted by PHAB and NACCHO to engage grantees of the special accreditation support initiative for small and rural health departments. It was a very productive meeting for PHAB, NACCHO, and the health department representatives.
2. Internal communication plan:
 - Submit monthly updates on accreditation activity to the Director, the Board of Health, and staff;
 - Devote a portion of each staff meeting to in-depth exploration of the accreditation, domains, standards, and measures;
 - Determine staff involvement in accreditation activity.
3. Policies and Procedures:
 - Continued developing policies and procedures (see attached list).
4. Roadmap to Accreditation (required for NACCHO grant):
 - Reviewed “roadmaps” from other health departments;
 - Began crafting the roadmap for Needham Public Health Division
5. Organizational self-study (required for NACCHO grant):
 - Continuing on-going study to determine our readiness for accreditation.
6. Quality Improvement (required for NACCHO grant):
 - Attended the Open Forum on Quality Improvement and Innovation in Public Health, sponsored by the National Network of Public Health Institutes.
 - Lynn will provide a workshop on Quality Improvement concepts and tools for staff in late April or May.

**Needham Public Health Department
Rachael Greenberg, Public Health Associate
March 2018 Monthly Report**

The Town of Needham has begun activities to move its Healthy Aging Program forward. In mid-February 2018, a new Program Manager joined the team to lead this initiative and, over the past six weeks, Needham has undertaken a number of start-up activities to advance its aging work. An overall description of the Healthy Aging Program is as follows:

The Town of Needham is developing a program to help seniors age in place and live independently. Through the program, the Town will conduct home assessments (performed by Social Workers or Public Health Nurses) for adults in Needham age 60 or older. Home assessments will include a thorough evaluation of home hazards, especially regarding trips and falls, and discuss other risk factors, such as exercise and nutrition. Referrals will be made to providers and services as needed and participants will be encouraged to attend exercise classes at the Center at the Heights. Free supplies (e.g. night lights, pill boxes) will be given during the visit. All participants will receive two and four week follow-up phone calls. After a program pilot, approximately 40 home visits will be conducted between August and December of 2018.

Program activities completed between mid-February and March 2018 include:

- Began holding biweekly Healthy Aging Program team meetings
 - The team includes the Program Manager, three Social Workers, one Public Health Nurse, and the Director of Health and Human Services
- Developed a concrete goal, target population, and objectives
- Developed a year-long work plan, detailing the timeframe for program piloting (mid-May through June 2018) and roll out (August 2018), as well as a staff training in May and a program launch event in September 2018
- Identified a comprehensive, evidence-based home assessment to use
- Identified other evidence-based programming to pair with the home assessments (e.g. exercise classes at the Center at the Heights)
- Began development of program protocol and forms
- Began development of an evaluation plan, including a program logic model
- Identified and began reaching out to potential partners for cross-referrals (e.g. Riverside Community Care and Beth Israel Deaconess Hospital)
 - Connected with four potential partners in March
- Identified supplies to be given to each participant who receives a home assessment (e.g. pill boxes and nightlights)
- Began planning for a staff training to be held on May 1st, 2018, which will teach staff about high-risk issues for older adults in the home, how to conduct the home assessments, and the program protocol
 - Highly qualified trainer from Boston University who serves on the Massachusetts Commission on Falls Prevention was identified to lead the training
- Program Manager attended the Massachusetts Department of Public Health's Ounce of Prevention conference on March 27th, which included a session that discussed older adult falls prevention.

Needham Public Health Department

Catherine Delano, Senior Substance Use Prevention Program Coordinator

March 2018 Monthly Report

Section 1: Highlights

- Action team meetings
- Hosted “Opioid Addiction: Facts and Faces”
- Hosted “Hidden in Plain Sight” and “Vaping Explained”
- Received applications for Youth Diversion Program Coordinator; will start interviews next month
- Assisted Youth and Family Services with SAAP three students weekly
- Continued work on SPAN’s sustainability plan
- Applied to Mental Health First Aid Instructor training for MetroWest Health Foundation Responsive Grant
- Attended “Own Your Peace”
- Met with Rachel Greenberg about continuing and finishing Needham Housing Needs Assessment

Section 2: Goals

- Find a central location for the Division to work
- Build SPAN capacity/community recognition
- Build youth coalition capacity
- Finalize details of Alcohol Compliance checks for Director of HHS
- Finalize details for Youth Diversion Program by early summer 2018

Needham Public Health Department

March 2018

Substance Abuse Prevention & Education
Needham Coalition for Youth Substance Abuse Prevention ~ NCYSAP
Karen Mullen, Project Coordinator/Capacity Building

Section 1: Activities

Activity	Notes
Meetings:	
SPAN Steering Committee Meeting	Action teams reported progress. Discussed upcoming HIPS event, planning community event to screen/discuss "If They Had Known" documentary spread awareness of mixing alcohol and prescription drugs, Diversion Program
Marijuana Action Team Meetings (2)	Continued planning for NHS student conference - objectives, messaging, timing, agenda, potential speakers & workshops. Objective- For seniors to leave high school with a "tool kit" of life skills they can use to understand their personal needs and plan for the future. Focus: health and wellness of mind and body.
Prevention Team Meeting	Met with Lynn to understand expectations re: Policy & Procedures project
Meeting w/Aaron Sicotte (NHS Principal)	Provided input for NHS Sr. Conference, Sherriff's distracted driving car/goggles event for prom/grad season, "If They Had Known" event
Meeting w/Dan Lee (NHS Athletic Dir)	Provided input for NHS Sr. Conference planning, Offered to have Assist. AD teach a workshop on bystander intervention
Meeting w/Lily Alberding (SALSA Student)	Discussed logistics for "Make A Statement Day" SALSA t-shirt making event.
Events:	
SALSA "Make a Statement Day" event	3/15 Event at NHS sponsored by SALSA where any student can stop by for pizza, music, t-shirt design of a statement they can wear at the annual NHS event on 3/16.
Administration:	Prepare Monthly Report, time sheets
	SALSA Administration- Update New member contact information, update community service learning hours for volunteers, submit CSL hours to Admin. in 30 hour increments for students.
Project Management:	SALSA 2/27 & 2/28 Field Trip Follow-up- Post photos on SALSA Facebook/Instagram pages, confirm dates of next Pollard trip, ensure pizza invoices are paid

<i>Activity</i>	<i>Notes</i>
	SPAN/NHS Sr. Conference- Solicit support and input from stakeholders (NHS Admin, Guidance, Youth Services, Students) incorporate recommendations into conference outline. Present findings to MJ Action Team. Research potential venues, book meetings with college community relations departments to discuss venue availability/costs, communicate updates to department.
	SALSA “Make a Statement Day” event planning- Event was rescheduled due to snow. Confirm new date/time/place with school, coordinate logistics with student chair, Needham Youth Services and NHS, order food/beverages, coordinate delivery of t-shirts/markers
	SALSA student support of SPAN action teams- ensure students are aware of meetings, arrange for excused absences from school for meetings, give CLS credit for student time
	MJ Action Team Follow-up- Meeting prep, student reminders and class dismissals, post meeting follow-up (book space for next meeting).
	Meeting Preparation- update conference outline prior to/after stakeholder meetings
	SALSA at Pollard 4/23 & 4/27- Confirm dates with Pollard, Recruit students for both dates, prepare/submit field trip request to NHS Admin, Prepare/submit transportation requests, Prepare/communicate Field Trip Permission forms for students, confirm & communicate rehearsal space for both dates,
	DA Leadership Event 4/24- Recruit SALSA students to attend, prepare/submit field trip request to NHS Admin, Prepare/submit transportation request, Prepare/communicate Field Trip Permission form for students
	“If They Had Known” event- Contact PTC President Kerry Hurwich to set up meeting to discuss support of event. NHS Principal in support of event and recommended PTC partnership.

Needham Health Department
Monica De Winter, Program Support Assistant
Karen Shannon, Program Support Assistant
March 2018 Monthly Report

Section 1: Summary

During the month of March our primary focus was the quarterly SPAN meeting which hosted, “Opioid Addiction: Facts and Faces,” with Dr. Paula McEvoy presenting, and the organization and delivery of the Hidden in Plain Sight (HIPS) and “Vaping Explained” event. Additional work was accomplished on the Mental Health First Aid grant and the New Employee Mentoring Program, a Solutions Team for the Town of Needham employees.

Section 2: Activities

<i>Activity</i>	<i>Notes</i>
HIPS/“Vaping Defined” event organization	Assisted in planning, preparation and delivery of this event held on 3/22/18 at Pollard MS. Activities included assisting with: training 16 volunteers for being guides at the HIPS exhibit, publicity, email correspondence, preparation of the HIPS exhibit supplies, preparation of an event survey, and following up with thank you notes to presenters and key volunteers. Prepared educational handout for vaping presentation.
Email correspondence	Needham Parents Care correspondence regarding meetings and events plus the parent messaging campaign authors (drafts and final revision and dissemination to the schools)
Data input	Entered accomplishments and outputs to REACH software. Used monthly reports as a guide for Catherine, Karen Mullen, Karen Shannon and Monica.
Prepared minutes	For Needham Parent Care and SPAN Steering Committee.
Mental Health First Aid Grant administration	Prepared document outlining application process/procedure for 6 Needham individuals who will apply/attend instructor training/certification.

Solutions Team: New Employee Mentoring Program	Karen assisted with development of training material for this new program which will be launching for Town of Needham employees later this Spring. Training to be conducted for employees who volunteers as Mentors.
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Section 3: Meetings & Conferences

<i>Title</i>	<i>Description</i>	<i>Attendance</i>
HIPS volunteer training, 3/1/18	Trained volunteers from the community, including parents, Pollard MS staff/administration. Volunteers will cover shifts during HIPS exhibit on 3/22.	17
Needham Parents Care meeting, 3/8/18	Discussed HIPS training logistics and volunteer recruitment; updates on parent book groups and parent messaging campaign.	6
SPAN Meeting, 3/9/18	Quarterly SPAN meeting. This meeting had educational focus, with title, "Opioids Facts and Faces." Dr. Paula McEvoy presented science and data behind opioid use. Madison, young adult in recovery, presented her addiction story.	~40
Prevention Team Meeting, 3/20	Meeting at CATH with Catherine Delano, Summer Koop, Karen Mullen, Karen Shannon and Monica De Winter. Met with Lynn Schoeff to review Prevention Team procedures and protocols; developed plan for completing.	6
Social Worker Luncheon and Learning, 3/20	Attended event hosted by LaTanya Steele of CATH.	~40

Dedham SAPC	Monica met with Carol Read and the Dedham PH Nurse to provide documentation needed for the Dedham coalition's application for a DFC grant.	3
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COMMUNICABLE DISEASES and Animal Bites - Fiscal Year 2018

DISEASES:	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	Apr	MAY	JUN	T18	T17	T16
BABESIOSIS		1	2	1									4	2	0
Borrelia Miyamota													0	0	1
CAMPYLOBACTER	1	2	3		1	1		2					10	7	9
CRYPTOSPORIDIUM			1										1	0	0
Cyclosporiasis		1											1	0	0
Dengue													0	1	
E-Coli													0	0	0
EHRlichiosis/ HGA	1					1							2	2	2
Enterovirus					1								1	1	3
GIARDIASIS						1							1	2	1
Haemophilus Influenza													0	1	0
HEPATITIS B	1	2				1	1						5	8	5
HEPATITIS C		1		3		1	2	1					8	21	12
Influenza	1					5	70	97	26				199	108	102
Legionellosis		1				1							2	0	0
Listeriosis													0	0	1
LYME	9	12	2	2	3	3	4	2	5				42	44	58
MEASLES													0	0	0
MENINGITIS													0	0	0
Meningitis(Aseptic)			1										1	2	0
Mumps													0	0	2
Noro Virus					1				1				2	2	2
PERTUSSIS	1												1	4	1
SALMONELLA	2								1				3	2	5
SHIGA TOXIN													0	1	0
SHIGELLOSIS													0	0	3
STREP Group B		1											1	0	3
STREP (GAS)			1										1	0	1
STREP PNEUMONIAE			1				2						3	0	0
TUBERCULOSIS													0	0	0
TULAREMIA													0	1	0
Latent TB- High Risk													0	1	1
Varicella	1	1		2		2	1						7	10	9
Vibrio													0	1	1
West Nile virus													0	0	0
Zika		1											1	1	0
TOTAL DISEASES	17	23	11	8	6	16	80	102	33	0	0	0	296	221	222

DISEASES:	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	Apr	MAY	JUN	T18	T17	T16
Revoked Diseases Investigated	1	3	2										6	13	8
Contact Investigation													0	1	0
Animal/Human Bites															
DOG	8	3	4	5		2	2	3					27	15	8
CAT													0	0	2
BAT		3					1		2				6	5	5
SKUNK													0	0	1
RACCOON													0	0	0
other													0	1	0
TOTAL BITES	8	6	4	5	0	2	3	3	2	0	0	0	33	22	10

Immunization	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	FY18	FY17	FY16
B12	2	2	2	2	2	2	2	2	2	2			18	22	23
Flu (Seasonal)	0	0	0	337	164	7	5	9	0	0			522	674	816
TDap	0	0	0	0	0	0	0	0	0	0			0	1	0
Varicella	0	0	0	0	0	0	0	0	2	0			2	0	0
Consult	19	11	19	9	9	18	30	47	51	0	0	0	213	592	475
Fire/Police	8	3	0	0	3	6	4	10	5				39	80	40
Schools	3	2	12	0	0	3	3	6	2				31	106	88
Town Agencies	6	4	6	6	5	8	15	30	40				120	246	216
Community Agencies	2	2	1	3	1	2	8	1	4				24	160	139

Assistance Programs	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	FY18	FY17	FY16
Food Pantry	1	2	0	2	4	2	0	2	0				13	20	21
Food Stamps	0	0	0	0	0	0	0	0	0	0			0	4	6
Friends	0	0	0	0	0	0	0	0	0	0			0	0	1-\$300
Gift of Warmth	2	2	0	3	1	1	2	1	3				15(\$4772)	11	17
Good Neighbor	1	0	0	0	0	0	0	1	2				3 \$425/fam	8	5
Park & Rec	0	0	0	0	0	0	0	1	0				1	2	5
RTS	0	0	0	0	0	0	0	0	0	0			0	0	0
Salvation Army	0	0	0	0	0	0	0	0	0	0			0	0	0
Self Help	0	2	1	2	3	8	6	3	2				27	46	27
Water Abatement	0	0	0	0	0	0	0	0	0	0			0	0	2

Gift of Warmth Donations

Wellness Programs	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	FY18	FY17	FY16
Office Visits	22	46	31	40	41	34	40	55	32				341	481	447
Safe Visits	1	0	0	0	1	2	3	1	0				8	7	10
Clinics	0	0	0	0	0	0	0	0	0				0	0	31
Housing Visit	3	2	0	0	1	1	5	1	0				13	6	8
Housing Call	12	10	2	1	14	10	25	10	15				99	37	70
Camps-summer	3	8	8	0	0	0	0	0	11				30	50	72
Tanning Insp	0	0	0	0	0	0	0	0	0				0	0	0
Articles	0	0	0	1	0	0	2	0	0				3	3	2
Presentations	0	0	1	2	2	1	2	3	2				13	0	2
Cable	0	1	0	1	0	0	0	0	0				2	5	1

EMPLOYEE WELLNESS	July	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	FY18	FY17	FY16
BP/Wellness - DPW/RTS	12	16	12	15	14	12	10	12					103	169	120
FLU VACCINE	0	0	0	24	12	2	2	0	0				40	48	87
CPR/AED INSTRUCTION	0	0	0	0	0	0	0	0	0				0	31	26
SMOKING Education	0	0	1	0	0	0	0	1	0				2	14	9
HEALTH ED Tick Borne	100	20	12	0	0	0	0	0	0				132	90	67
HEALTH ED Mosquito Borne	100	20	12	0	0	0	0	0	0				132	80	80
HEALTH ED FLU	0	0	8	200	22	10	18	16	10				284	160	327
FIRST AIDE	5	4	3	3	2	2	4	3	5				31	61	34
GENERAL HEALTH EDUCATION	5	8	10	6	5	5	25	20	15				99	258	188
Police weights	0	0	0	0	17	2	0	0	0				19	43	33
TOTAL EMPLOYEE CONTACTS	222	68	58	248	72	33	59	52	30	0	0	0	842	954	1028

Emergency Planning: NC7
Region 4B
LEPC

Meetings, Events, and Trainings

<i>Title</i>	<i>Description/Highlights/Votes/Etc.</i>
CHNA Meeting	Innovative approaches to health
CCIT	Monthly Meeting
Mass Housing	Statewide steering meeting on hoarding
Emergency Planning	ICS training NIMS/ICS cert training
	Storm meetings x3
	Review of MRC with Neia Illingworth – x 3
DVAC Meeting	Monthly meeting
Community meeting	Newton-Wellesley Hospital quarterly community meeting
SAPC Interviews	Conducted interviews for SAPC intern- Photo Voice Project
Ounce of Prevention	Conference in Worcester
Staff Meeting	Monthly meeting with staff updates
Infection Control	BID Needham quarterly meeting
TB Education Webinars	Importance of TB Treatment & MDR TB Control Through MDPH
Healthy Aging	Project meeting x2
BC Nursing Student Intern	Mentoring Senior BC Nursing Student in Public Health Clinical Rotation
Presentations	
	Education Board at CATH – nutritional awareness

Needham Public Health Division

March 2018

Assist. Health Dir. - Tara Gurge

Health Agents - Diana Acosta and Brian Flynn

Activities

Activity	Notes
Animal Permit Applications/Inspections conducted (New)	1 – Animal Permit initial inspection conducted for: - #32 Barbara Rd. - Checked setbacks of coop on property. Final inspection to be conducted with Animal Control this spring. (On-going).
Bodyworks	5 - Routine (unannounced) inspections with local police and state inspector conducted at: - B In Touch Massage (#1253 Highland Ave.) – All set. - Season Day Spa (#25 Brook Road) – Working with state on licensing requirements. Fine issued. - My Spa 2 (#400 Hunnewell St.) – Massage therapist needs a local business license and a valid state license (in process.) - 360 Degrees of Fitness and Wellness (#140 Gould St.) – Closed for day. (In process of working with us and also with the state on proper licensing requirements for both massage and bodywork. (Follow-up inspection pending.) - Stress Relief Management (#366 Cedar St.) – Not home. (State to follow-up.)
Bodywork Practitioner Permits (new)	1 – Bodyworks Practitioner permit issued to: - Jennifer Green @ B In Touch Massage
Demo reviews/approvals	3 - Demolition sign-offs: • 4 Dunbarton Road • 11 Prince St • 60 Maple Street
Emergency/Fire Dept. Call	0 – Emergency calls received from Fire Dept.
Food – Complaint / Follow-up	1 – Food Complaint received for: - Kostas' Pizza - Woman emailed and may have gotten sick from eating chicken on Greek salad 1 – Follow-Up Inspection conducted at: - Kostas' Pizza –Inspection conducted and no violations seen on site.
Food – Emergency meeting	1 – Emergency Meeting conducted at: - Acapulcos Restaurant – Diana and I, along with the Building Commissioner, required a mandatory on site meeting with the property owner, along with restaurant owners/managers, and pest control technician to review/discuss a new pest issue with termites in the floor boards in an area of their establishment. Pest service to add this pest control to their existing contract. Landlord will work with Building Commissioner in getting the proper permits out to fix/repair the areas observed. (In process.)
Food – Needham	1 – Needham Farmers Market Permit Issued:

Farmers Market Insp.	- <u>Native Colombian Foods</u> – Permit issued for prepackaged whole coffee beans for sale at market. We are working with Tom Gehman, Farmers Market Coordinator, on getting a list of potential vendors that will be present at this year's market. We'll be reviewing permit applications once submitted (On-going.)
Food – Temporary Food Event Permits	10 – Temporary Food Permits issued to: -Relay for Life @ Newman -Needham Woman's Club Grand Wine Tasting - True Taste Kitchen @ Powers Hall -La Morra for YMCA Gala @ Powers Hall -Easter event @ Greendale Ave Worship Center -Book Author Presentation @ CATH -Pansy Day @ Needham History Center -Revolution Catering, St. Joe's School Fundraiser @ Powers Hall -Broadmeadow PTC, 3rd & 4th Grader Survivor Event @ Needham High School -Let's Build Extravaganza @ Broadmeadow -Needham Jr. Football @ Memorial
Food – Plan Reviews/Follow-ups	4 – Food Permit Plan Reviews conducted for: - <u>Capella (Former Petit Robert space)</u> – Plan Review Packet received. Second walk through was conducted but still waiting for equipment to be installed. Plan to open in late April. (On-going) - <u>Panera Bread</u> - Closing for renovation; to occur over a 4 day period. Will follow up with an inspection once completed before the establishment reopens for service. (On-going) - <u>Le Petit Four</u> – Residential Kitchen Plan Review submitted. Many items on menu are not permitted to be made and sold from a home kitchen (i.e. quiches and ham & cheese croissants). Waiting to hear back from owner to see if she will continue pursuing the residential kitchen permit. (On going). - <u>Tumeric Boston Inc. (#1180 Great Plain Ave.)</u> – Plan Review received (On-going).
Food – Pre-operation/walk-through inspections	1– Pre-operation/walk-through inspections conducted for: - <u>Capella</u> – Follow-up pre-operation inspection conducted. Checked equipment placement and basement area (On-going).
Food – Change of Owner	0 – Food Permit Change of Owner.
Food – Closed Establishments (or closing in near future)	3- Food Establishments that are closed/closing for business: - Avery Manor (closed) - Avery Crossings (closing – One more resident still on site) - Boony Bunz (closed)
Food - Mobile Food Trucks	5 - Applications Received: - Sam's Hot Dog - Roxy's Grilled Cheese - Moyzilla - Rice Burg - Curbside Caps 2 – Truck Inspections Conducted for: - Sam's Hot Dog - passed - Curbside Cap – Did not pass. Had different registration; State inspection was rejected; menu was changed; missing lids on trash bins; need additional thermometers in cold holding units. Will continue to coordinate inspections with Fire Dept. for remaining trucks.
Housing – Complaints/Follow-ups	0 – Housing Complaints/Follow-ups.

Nuisance – Complaints/ Follow-ups	4/4 – Nuisance Complaints/Follow-ups. - #324 Greendale Ave.- Trash and debris all over front of property. Letter was sent to owners of property. Spoke to owner and she has arranged for a dumpster from JC Timmerman to remove all the items cluttering the property. Was delayed due to snow however a site visit was conducted and Diana can confirm that the dumpster was present on the property ready to be used. - #59 Pershing Road – Garbage barrels are still in public view. A follow up letter was sent out after speaking with owner about the bins. Recommended to pull up the bins to the house or garage instead of leaving on lawn at the end of the driveway. - Marsh Rd./Dunkin Donuts – Complaint received about idling local builder trucks outside Dunkin Donuts. Reports of trucks idling for 30-40 minutes. Nuisance noise and odors present. Spoke to builder about complaint. He will ensure no trucks are idling before 7 AM, and that they are not idling for that length of time. - #298 Linden St. – Report of water from neighbor’s sump pump being directed into town storm drain by street. Notified Water and Sewer about concern.
Pool Plan Reviews/ Follow-ups	6 – Pool Plan Reviews/Follow-ups conducted for: - Rosemary Town Pools –Tim, Diana and I in process of attending weekly progress meetings. In process of working on specific pool permit requirements (i.e. Pool Rules, signage, etc.) (On-going.) - Second Ave. Residences Pool - Approved proposed pool design layout plan. In process of working with owner on specific pool permit requirements (i.e. signage, etc.) (On-going.) - Mill Creek Residences Pool on Greendale Ave. - In process of working with owner on specific pool permit requirements (i.e. lifeguard chair, etc.). Signage was confirmed. (On-going.) - Residence Inn – Request made to upgrade pool sanitation system to a chlorine generating system. Plans to be submitted for review. (In process.) - YMCA Pool – CO2 System to be installed (In process). Follow-up site visit pending once system is installed. - Homewood Suites – Initial new indoor pool pre-operation inspection pending (this spring.)
Pool - Complaints/Follow Up	0 – Complaints received
Pool – Routine Inspections	0- Routine Inspections
Planning Board/Special Permit plan reviews	0 – Special Permit Plan Review conducted
Medical Marijuana Dispensary (RMD)	0 – Permit Issued to: -
Septic Abandonment Forms	0 – Septic Abandonment Forms received.
Septic Construction Permit/Trench permit	0 – Septic Construction Repair Permits issued.
Septic – Soil/Percolation Tests	0 – Soil Tests conducted.
Septic – Plan Reviews	4 – Septic Plans received for review: - #100 Windsor Rd. – Septic plan approval letter sent. (Installation pending.)

	- #1600 Central Ave. – Plan conditional approval issued for new septic tank (tank needed to be relocated due to house demo/expansion.) New house plans to be submitted for review, prior to final approval. (Tank installation pending.) - #745 Central Ave. – Proposed septic plans submitted for upgraded septic system. (Plan review still in process.) - #188 Charles River St. – Proposed tank relocation plan submitted due to proposed deck to be installed. (Plan review still in process.)
Septic – Installation inspections	0 – Septic Installation inspections conducted.
Septic Installer Permit Renewals	1 – Septic installer permit renewal application received and exam taken - J. Hockman
Subdivision Reviews	0 – Subdivision reviews conducted
Tobacco Complaints	1 – Tobacco smoke complaint received: - #83 Pickering St./Stephen Palmer Apts. (Unit #103) – Complaint received from occupant that rents upstairs from unit #103. Tobacco and marijuana smoke is migrating into her unit. Spoke to building maintenance. They were able to seal voids between units. Follow-up site visit conducted. Both occupants were satisfied with measures taken. Also provided signage to property manager.
Tobacco Insp. (Routine)	1 – Routine Tobacco inspection conducted.
Tobacco Compliance Checks	10 - Compliance checks conducted at all establishments. - Two students participated; no sales made to underage participant. (See summary sheet in packet.)
Waste/Trash Hauler Renewals/Permits Issued	24 – Renewal Applications received 1 – Permit issued. - Roy's Recycling Service Truck inspections (on-going) – In process of scheduling inspections with trash haulers.
Well – Plan Reviews/Approval to Drill Letter	1 – Well Approval to Drill letter issued for: - #60 Wildwood Dr. – Approval letter issued to drill an irrigation well.

Zoning Board of Appeals Project reviews	0 – Zoning Board of Appeal reviews conducted.
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Yearly

Category	Jul	Au	S	O	N	D	J	F	M	A	Ma	Ju	FY' 18	FY' 17	FY' 16	Notes/Follow-Up
Biotech	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	Biotech registrations
Bodywork	3	0	0	0	2	3	0	0	5	0	0	0	13	6	11	Bodywork Estab. Insp.
Bodywork	1	0	0	0	0	5	0	0	0	0	0	0	6	4	3	Bodywork Estab. Permits
Bodywork	3	0	1	0	0	17	0	0	1	0	0	0	21	13	10	Bodywork Pract. Permits
Bottling	0	0	0	1	0	0	0	0	0	0	0	0	1	2	1	Bottling Permit insp.
Demo	9	10	12	16	7	9	7	6	3	0	0	0	79	112	110	Demo reviews
Domestic Animal Permits/ Insp.	0/0	0/0	0	0	0	0	0	1/1	0/1	0	0	0/0	1/2	17/16	16	Animal permits/ Inspections
Food Service	11	12	19	22	19	14	19	10	19	0	0	0	145	198	209	Routine insp.
Food Service	1	0	10	4	1	2	4	1	1	0	0	0	23	37	35	Pre-oper. Insp.
Retail	3	3	10	6	7	3	0	9	5	0	0	0	46	69	71	Routine insp.
Resid. kitchen	0	0	1	2	1	0	0	0	2	0	0	0	6	7	11	Routine insp.
Mobile	0	0	0	1	0	0	0	0	2	0	0	0	3	15	9	Routine insp.
Food Service	6	3	3	11	6	7	8	0	3	0	0	0	48	51	50	Re-insp.
Food Service/ Retail	1	0	3	2	1	132	3	0	1	0	0	0	143	177	176	Annual/ Seasonal permits
Food Service	8/4	11/4	12/0	18/9	17/0	20/0	5/1	5/0	10/0	0/0	0/0	0/0	106/18	158/62	107/54	Temp. food permits/ Temp. food insp.
Food Service	0/40	0/24	2/24	0/12	0	0	0	0	1/0	0	0/0	0/0	3/100	7/33	9/16	Farmers Market permits/ Market insp.
Food Service	1/1	2/2	2/2	4/4	3/3	2/2	1/1	1/1	1/1	0	0	0/0	17/17	13/17	21/21	New Compl/ Follow-ups
Food Service	5	5	6	2	4	4	1	2	4	0	0	0	33	33	32	Plan Reviews

Food Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	Admin. Hearings
Grease/ Septage Haulers	1	0	0	0	0	21	2	0	0	0	0	0	24	24	29	Grease/ Septage Hauler permits
Housing (Chap II Housing)	0/0	0/0	7/0	0/0	0	0	0	0	0	0	0	0/0		14/14	7/4	Annual routine insp./ Follow-up insp.
Housing	7/7	2/2	2/2	3/3	1/2	0/1	2/2	0	0	0	0/0	0/0	17/19	7/11	18/37	New Compl./ Follow-ups
Hotel	0	0	0	0	1	1	0	0	0	0	0	0	2/0	3/0	3/0	Annual insp./Follow-ups
Nuisance	5/5	6/6	0/0	4/4	3/3	4/4	2/2	2/2	4/4	0/0	0/0	0/0	30/30	30/45	44/50	New Compl./ Follow-ups
Pools	0/0	0/0	0/0	0/0	1/2	0	0	0/0	0	0	0/0	0	1/2	13/8	9/3	Pool insp./follow-ups
Pools	0	0	0	0	0	8	0	0	0	0	0	0		9	9	Pool permits
Pools	2	2	2	3	3	3	3	5	6	0	0	0	29	19	8	Pool plan reviews
Pools	0	0	0	0	0	4	0	0	1	0	0	0	5	6	4	Pool variances
Septic	0	0	1	1	1	0	0	0	1	0	0	0	4	18	8	Septic Abandon Forms
Septic	0	1	0	0	0	0	0	0	0	0	0	0	1	5	9	Addition to a home on a septic plan rev/approval
Septic	4	0	0	0	5	1	1	0	0	0	0	0	11	43	23	Install. Insp.
Septic	0	0	0	0	0	1	0	0	0	0	0	0	1	0	3	COC for repairs
Septic	2	0	0	0	0	0	0	0	0	0	0	0	2	3	3	COC for complete septic system
Septic	5	4	4	6	5	4	3	5	4	0	0	0	40	62	61	Info. requests
Septic	0	0	0	0	2	0	0	0	0	0	0	0	2	6	8	Soil/Perc Test.
Septic	0	0	0	0	1	1	0	0	0	0	0	0	2	8	6	Const. permits
Septic	0	0	0	0	0	2	5	0	1	0	0	0	8	11	9	Installer permits
Septic	0	0	0	0	0	1	0	0	1	0	0	0	2	6	6	Installer Tests
Septic	0	0	0	0	0	0	0	0	0	0	0	0		7	3	Deed Restrict.
Septic	1	2	1	1	1	0	2	3	4	0	0	0	15	14	14	Plan reviews
Sharps permits/ Insp.	0	0	0	0	0/5	8/2	0	1	0	0	0	0	9/7	9	10	Disposal of Sharps permits/Insp.
Subdivision	0/0	0/0	0/0	0	0	0	0	0	0	0	0	0		3/1	3/0	Plan review-

																Insp. of lots /Bond Releases
Special Permit/ Zoning memos	1	0	1	2	1	0	1	0	0	0	0	0	6	12	16	Special Permit/ Zoning
Tobacco	0	0	0	1	10	0	0	0	0	0	0	0	11	12	13	Tobacco permits
Tobacco	0/0	1/0	2/0	4/0	1/0	2/1	1/0	2/1	1/1	0/0	0/0	0/0	14/3	25/6	25/7	Routine insp./ Follow-up insp.
Tobacco	0	0	0	11	0	10	0	0	10	0	0	0	31	34	48	Compliance checks
Tobacco	0/0	0/0	0/0	1/1	0	0	0/0	0	1/1	0	0	0	2/2	2/2	4/4	New compl./ Compl. follow-ups
Trash Haulers/ Medical Waste Haulers	0/0	0/0	0/0	1	0	0/0	0/1	0	0	0/0	0	0	1/1	26/2	30/2	Trash Hauler permits/ Medical Waste Hauler permits
Wells	0	0	0	1/0	0/0	0	0/0	0	1/0	0/0	0	0	2/0	7/3	6/0	Permission to drill letters/ Well permits

FY 18 Critical FBI Violations Chart (By Date)

Restaurant	Insp. Date	Critical Violation	Description
Boony Bunz	8/11/17	- Cold Holding	- Need to ensure that prep refrigerator cold-holding unit temp. is maintained at 41 deg F or below. Had refrigerator prep unit serviced. Work order submitted for our file.
Dunkin Donuts (Highland Ave.)	10/30/17	- Handwash Facilities.	- Need to ensure that there is sufficient hot water, min. 110 deg. F, at front hand wash sink ASAP. Repair made. Follow-up site inspection conducted.

Farmhouse Restaurant	1/9/18	- Food Contact surfaces cleaning and sanitizing	- Ensure that dish machine reaches a min. temperature of 180 deg F or greater for final hot water sanitizing rinse. Had serviced.
Dunkin Donuts (Great Plain Ave.)	1/17/2018	- Handwash Facilities.	Need to ensure that there is sufficient hot water, min. 110 deg. F, at all sinks ASAP. Pilot light was out. Follow-up site inspection conducted and hot water was confirmed.



Needham Public Health Division

1471 Highland Avenue, Needham, MA 02492
www.needhamma.gov/health

781-455-7500 ext. 511
781-455-0892 (fax)



April 9, 2018

Dear Owner/Manager:

The Needham Public Health Division (NPHD) has received a grant from the U.S. Food and Drug Administration (FDA) to conduct a foodborne illness risk factor study of retail food establishments in Needham. **Your facility has been selected to be part of this research project designed to assess food preparation procedures and practices specific to the various segments of the retail food industry.** The NPHD will use this research for identifying best practices within the industry and directing limited resources to areas that will provide the most significant public health benefits.

NPHD has hired Pamela Ross-Kung of Safe Food Management as the risk factor study survey consultant. Ms. Ross-Kung is a Registered Sanitarian and ServSafe Instructor with over thirty years of food industry experience. She has completed food safety inspections for risk factor studies in Newton, Melrose, Wakefield, Malden, Medford, and Winchester. Ms. Ross-Kung will be conducting these surveys between May – mid November 2018. Please inform your staff that an **unannounced** visit by Ms. Ross-Kung will be occurring during these months.

This survey will not be counted as a routine inspection. Your facility's name will not appear on any reports or public documents. The research project is designed to protect the privacy of participating establishments to the extent the law permits. The data collected is tabulated using broad industry segments and is not associated with any specific establishment.

The inspection data will be analyzed to identify foodborne illness risk factors that most frequently occur in Needham's food establishments. Identifying priority risk factors will allow the NPHD to determine where food safety improvements need to be made. In 2019, Needham will use this data to develop targeted intervention strategies to help food establishments decrease the occurrence of foodborne illness risk factors.

Ms. Ross-Kung will record her findings on a standard survey form provided by the FDA. Although no inspection report will be left with your facility, she will meet with the person-in-charge at the end of the visit to discuss significant findings that may assist you in enhancing the effectiveness of your food safety system. Your questions regarding the data collection process or food safety issues are encouraged as part of the visit to your facility.

If significant food safety issues are identified, they will be brought to the attention of the person-in-charge or responsible employee to determine the appropriate corrective action based on the current *FDA Food Code*.

(OVER)

Should an observation be made of a food safety procedure or practice that poses a significant public health risk, every effort will be made to work with you to ensure that the appropriate corrective action is taken to alleviate the hazard during the data collection. The Health Department will only be notified at the time of the visit if Ms. Ross-Kung feels that there is an imminent health hazard which needs to be addressed immediately (e.g. no hot water).

However, should a situation arise where a significant public health risk cannot be resolved during the data collection, Diana Acosta, Needham Environmental Health Agent, or other member of the Needham Health Department will be contacted to work with you to ensure corrective action is taken in a timely manner.

Thank you for your willingness to cooperate in this important endeavor. It is through this type of cooperative effort that government and the food service industry seek to provide safe and wholesome food to the consuming public.

In the future, should you have any questions regarding this study or other food safety issues, please do not hesitate to contact Tara Gurge, Assistant Public Health Director by phone at (781) 455-7500 Ext. 262 or email at tgurge@needhamma.gov.

Sincerely,

Diana Acosta, Environmental Health Agent
Tara Gurge, Assistant Public Health Director
Tim McDonald, Public Health Director

Risk Level	Establishment Name	Description	Estab Street	Estab Zip	Estab Telephone
1	360 Degrees of Fitness & Wellness	retail food, prepackaged phf's & non	140 Gould St.	02494	781-444-5360
1	7-Eleven-32485C	retail food	845 Highland Ave.	02492	781-449-1154
1	7-Eleven-36044A	retail food	173 Chestnut St.	02492	781-449-0979
1	Bin Ends Wine Store	retail food, spirits	65 Crawford Street	02494	781-400-2087
1	Bread of Life/Carter Church	church kitchen	800 Highland Ave.	02492	781-444-2460
1	Buddha Superfoods	limited menu, satellite bakery	14 Brewster Drive	02492	617-970-6305
1	Carleton Pavilion	event space	Dedham Ave./DeFazio Park	02492	781-455-7521
1	Christ Epis Church-Expressions Aft School	church kitchen	1132 Highland Ave. - MAIL GOES TO PO BOX	02492	(781) 444-1469
1	Coca-Cola	bottling	9 B Street	02494	781-449-
1	Congregational Church of Needham	church kitchen	1154 Great Plain Ave.	02492	781-444-2510
1	CVS - #2128	retail food	922-938 Highland Ave.	02494	781-449-5593
1	CVS - #674	retail food	980 Great Plain Ave.	02492	781-449-4488
1	Fast Splits	retail food	77 Charles Street	02494	781-449-4900
1	Fed Ex Office	retail food	25 Chapel St.	02492	781-433-0960
1	First Baptist Church	church kitchen	858 Great Plain Ave.	02492	781-444-
1	First Parish Unitarian	church kitchen	23 Dedham Ave.	02492	781-444-0823
1	Fundamentally Nuts	limited menu, farmer's market	17 Lindbergh Avenue	02492	781-400-3608
1	General Nutrition Center #7001	retail food	1450 Highland Ave.	02492	781-444-8757
1	Goldfish Swim School Store	retail food	45 Fourth Avenue	02494	781-881-2108
1	Grace Lutheran Church	church kitchen	543 Greendale Ave.	02492	781-444-3315
1	Great Plain Avenue Gas, Inc.	retail food	1111 Great Plain Ave.	02492	781-444-2117
1	Greendale Avenue Worship Center	church kitchen	754 Greendale Ave. (Good Shepherd Christian	02492	781-444-0321
1	Knights of Columbus	event space	1211 Highland Avenue	02492	781-589-4227
1	Lt. Manson H. Carter-VFW	event space	20 Junction Street	02492	781-444-9797
1	Memorial Park Building	event space	Memorial Field	02492	781-444-8949
1	North Hill - Necessities Store at North Hill	retail food	865 Central Ave.	02492	781-444-9910
1	Needham BowlAWay	limited menu	16 Chestnut St.	02492	781-449-4060
1	Needham Center Fine Wine	retail food	1013 Great Plain Avenue	02492	781-400-1769
1	Needham Food Pantry	food pantry	570 Hillside Avenue	02494	781-444-2415
1	Needham Heights Auto. Service	retail food	875 Highland Avenue	02494	781-444-9745
1	Needham Junction Ice Cream	limited menu	40 Junction Street	02492	781-433-0336
1	Needham Pool and Racquet Club	retail food	1545 Central Ave.	02492	781-449-1393
1	Needham Service Center, Inc.	retail food	1401 Highland Ave.	02492	781-444-5100
1	Needham Wine and Spirits	retail food	1257 Highland Avenue	02492	781-449-1171
1	Omaha Steaks	retail food	120 Highland Ave., Suite 103	02494	781-449-2240
1	Presbyterian Church	church kitchen	1458 Great Plain Ave.	02492	781-444-3728

Risk Level	Establishment Name	Description	Estab Street	Estab Zip	Estab Telephone
1	Residence Inn Retail Store	retail food	80 B Street	02494	781-444-5750
1	Sheraton Needham Retail Store	retail food	100 Cabot St.	02494	781-444-1110
1	Simply Scrumptious	residential kitchen	1210 Greendale Ave. #322	02492	617-304-
1	Speedway #2472	retail food	207 Highland Ave.	02494	(781) 433-8683
1	St. Joseph's Catholic Church	church kitchen	1382 Highland Ave.	02492	781-444-
1	St. Sebastian's School Rink	retail food	1191 Greendale Ave.	02492	781-449-5200;
1	Staples the Office Superstore	retail food	163 Highland Ave.	02494	781-449-5766
1	Super Star Ice Cream Truck	mobile	164 Essex St. (Apt. 5)	01902	617-838-9224
1	Sweet Tahini	residential kitchen	215 Fisher Street	02492	617-893-2806
1	Taylor's Stationery, Inc.	retail food	1451 Highland Ave.	02492	781-444-6578
1	Temple Aliyah	church kitchen	1664 Central Ave.	02492	444-8522/food-
1	Temple Beth Shalom	church kitchen	670 Highland Ave.	02494	781-444-0077;
1	Teri's Toffee Haus	limited menu, satellite bakery	44 Hunnewell St.	02494	339-225-0927
1	The Kids Place	preschool	15 Highland Place	02492	781-444-2325
1	Vinodivino Wine Shop	retail food	922 Highland Avenue	02494	781-444-9463
1	Walgreens #01852	retail food	1478 Highland Ave.	02492	781-444-5714
1	YMCA Afterschool Program-FALL	seasonal camp, not susceptible popu	863 Great Plain Ave.	02492	781-444-6400;
1	YMCA Afterschool Summer Camp	seasonal camp, not susceptible popu	863 Great Plain Ave.	02492	781-444-
1	Center at the Heights	food service	300 Hillside Ave.	02492	781-455-7555
1	Reveler Beverage Company, LLC	retail food, spirits	250 Chestnut Street	02492	781-400-1203
2	A New Leaf	limited menu	920 Great Plain Ave.	02492	781-449-6777
2	Abbott's Frozen Custard	limited menu	934 Great Plain Avenue	02492	781-444-9908
2	Acorns Bakery & Café	limited menu	1032 Great Plain Ave.	02492	781-455-8080
2	Bagels' Best Inc.	limited menu	113 Chapel Street	02492	781-433-0003
2	Billy's Canteen Service	mobile	275 Nevada Street	02460	617-306-7679
2	Boony Bunz (old Sweet Corner)	limited menu	1056 Great Plain Ave.	02492	781-400-2934
2	Broadmeadow Elementary	school not serving a highly susceptible	120 Broadmeadow St.	02492	781-455-0498 x4
2	Brother's Pizza	limited menu	201 Reservoir Street	02494	781-444-5060
2	Café Fresh Bagel	limited menu	896 Highland Ave.	02494-	781-444-7444
2	Captain Marden's Seafoods, Inc.	mobile	35 Perwal Street	02090	617-803-8773
2	Cookies by Design	limited menu, satellite bakery	54 Highland Ave	02494	781-444-8230
2	Council on Aging		300 Hillside Ave.	02494	781-455-7555
2	D'Angelo's Sandwich Shop	limited menu	73 Highland Ave.	02494	781-444-0794
2	Domino's	limited menu	240 Chestnut St.	02492	781-449-5599
2	Dragon Chef Restaurant	limited menu	332 Chestnut Street	02492	781-449-4840
2	Dunkin Donut	limited menu	260 Chestnut Street	02492	(781) 453-0289

Risk Level	Establishment Name	Description	Estab Street	Estab Zip	Estab Telephone
2	Dunkin Donuts	limited menu	1201 Highland Ave.	02494	781-449-2825
2	Dunkin Donuts Mini Mart	limited menu	399 Great Plain Avenue	02492	781-433-9989
2	French Press Bakery & Café	limited menu	74 Chapel St.	02492	781-400-2660
2	Gianni's Gourmet Deli	limited menu	853 Highland Ave.	02494	781-453-
2	Beth Israel Deac Hosp Coffee - Glover	limited menu	148 Chestnut Street	02492	781-453-3010
2	Hazel's Bakery	limited menu	459 Great Plain Ave.	02492	781-444-4843
2	High Rock School	school not serving a highly susceptible population	77 Ferndale Road	02492	781-455-0455
2	Hillside Elementary School	school not serving a highly susceptible population	28 Glen Gary Rd.	02492	781-455-0461;
2	John Eliot School	school not serving a highly susceptible population	135 Wellesley Ave.	02494	781-455-0452;
2	Knowledge Beginnings	preschool	206 A Street	02494	781-455-8723
2	Kosta's Pizza and Seafood	limited menu	315 Chestnut Street	02492	781-449-2255
2	McDonald's	limited menu	340 Chestnut St.	02492	781-444-8592
2	Mighty Subs	limited menu	250 Highland Ave.	02494	781-444-9610
2	Mitchell Elementary School	school not serving a highly susceptible population	187 Brookline Street	02492	781-455-0466;
2	Needham Golf Club, Inc.	event space	49 Green Street	02492	781-444-5548
2	Needham High School	school not serving a highly susceptible population	609 Webster Street	02494	781-455-0800;
2	Needham House of Pizza	limited menu	914 Great Plain Ave.	02492	781-444-1139
2	Newman Elementary School	school not serving a highly susceptible population	1155 Central Ave.	02492	781-455-0416
2	Nicholas' Pizza	limited menu	33 Chapel Street	02492	781-449-6303
2	Olin College	school not serving a highly susceptible population	1000 Olin Way	02492	(781) 292-2361
2	Panella's Market and Deli	limited menu	50 Central Ave.	02494	781-400-2283
2	Panera Bread	limited menu	120 Highland Ave.	02494	(781) 453-
2	Pollard Middle School	school not serving a highly susceptible population	200 Harris Ave.	02492	781-455-0480;
2	Riverside Community Care - Elliot House	community home	255 Highland Avenue	02494	781-449-1212
2	Riverside Community Care Kitchenette	community home	255 Highland Ave.	02494	781-433-0672
2	Roche Bros. Supermarket	supermarket	377 Chestnut Street	02492	781-444-0411
2	Saint Joseph Elementary School	school not serving a highly susceptible population	90 Pickering St.	02492	781-444-4459
2	St. Joe'Monsignor Haddad Middle School	school not serving a highly susceptible population	110 May St.	02492	781-449-0133
2	St. Sebastian's School	school not serving a highly susceptible population	1191 Greendale Ave.	02492	781-444-1291
2	Stacy's Juice Bar	limited menu	1257 Highland Ave.	02492	781-444-5842
2	Stacy's Juice Bar - Bulfinch site	limited menu	250 First Avenue, Lobby	02494	617-332-3354
2	Starbucks Coffee #7227	limited menu	910 Highland Ave.	02492	781-444-6234
2	Subway	limited menu	1187 Highland Avenue	02494	781-453-4031
2	Sudbury Farms	supermarket	1177 Highland Ave.	02492	781-449-9180
2	Sweet Tomatoes Pizza	limited menu	320 Chestnut St.	02492	781-444-9644
2	Temple Beth Shalom Daycare	preschool	670 Highland Ave.	02494	781-444-0077

Risk Level	Establishment Name	Description	Estab Street	Estab Zip	Estab Telephone
2	The Dessert Workshop	limited menu, self serve	1450 Highland Ave.	02492	781-444-3840
2	Town House of Pizza	limited	892 Highland Ave.	02492	781-444-4333
2	Trader Joe's #504	supermarket	958 Highland Ave.	02494	781-449-6993
2	Treat Cupcake Bar	limited menu	1450 Highland Ave.	02492	781-444-4995
2	Volante Farms	supermarket	292 Forest St.	02492	781-444-2351
2	Volante Farms-Jordan Bros. Seafood Co.,	supermarket	292 Forest St.	02492	508-583-9797
2	Walker, Inc. Main Kitchen	school not serving a highly susceptible	1968 Central Ave.	02492	781-449-4500
2	WCVB/Five and Dine-Lovin' The Oven		5 TV Place	02494	(781) 449-0400
2	Epicurean Feast	cafeteria	117 Kendrick St.	02494	781-400-2912
2	Epicurean Feast at Kendrick	cafeteria	63 Kendrick St. (63 Kendrick St. Café/Lessings)	02494	781-449-0395
2	Founders Café/Shark Ninja	cafeteria	77 A Street	02494	978-372-7400
3	160 Gould St. Café/Cornerstone Café	full service restaurant	160 Gould Street	02494	781-444-2949
3	3 Squares Restaurant	full service restaurant	669 Highland Ave.	02494	781-444-4644
3	Bakers Best, Inc.	catering with phfs	150 Gould St.	02494	617-332-4588
3	Bertucci's Brick Oven Pizzeria	full service restaurant	1257 Highland Avenue	02492	(781) 449-3777
3	Blue on Highland	full service restaurant	882 Highland Avenue	02492	781-444-7001
3	Capella	full service restaurant	45 Chapel Street	02492	
3	Comella's	full service restaurant	1095 Great Plain Ave.	02492	781-444-5900
3	Cook Needham	full service restaurant	105 Chapel Street	02492	781-400-5927
3	Farmhouse Restaurant	full service restaurant	970 Great Plain Ave.	02492	781-449-6200
3	Fresco	full service restaurant	35 Chapel Street	02492	(781) 453-1975
3	Hearth Pizzeria	full service restaurant	974 Great Plain Ave.	02492	781-433-0600
3	L & K Kitchen (former RFK Kitchen)	full service restaurant	30 Dedham Avenue	02492	781-444-1792
3	Mandarin Cuisine	full service restaurant	238 Highland Ave.	02494	781-455-8801
3	Masala Art Restaurant	full service restaurant	990 Great Plain Avenue	02492	(781) 449-4050
3	PTC Corp. Kitchen	satellite kitchen	140 Kendrick St.	02494	781-400-8620
3	RD Mass Inc., LLC/ DBA Restaurant Depot	retail food	114 First Avenue	02494	781-449-1010
3	Residence Inn by Marriott Kitchen	limited menu	80 B Street	02494	781-444-5750
3	Sheraton Needham Hotel	limited menu	100 Cabot Street	02494	781-444-1110
3	Spiga Restaurant	full service restaurant	18 Highland Circle	02494	781-449-5600
3	Sweet Basil	full service restaurant	942 Great Plain Ave.	02492	781-444-9600
3	The James	full service restaurant	1027 Great Plain Ave.	02494	781-455-8800
3	The Rice Barn	full service restaurant	1037 Great Plain Ave	02492	781-449-8300
3	Trip Advisor Kitchen	limited menu, satellite facility	400 First Ave.	02494	781-800-5858
3	True Taste Catering	catering with phfs	301 Reservoir St.	02494	781-400-
4	Acapulcos Restaurant	full service restaurant	1 First Ave.	02494	339-225-4558

Risk Level	Establishment Name	Description	Estab Street	Estab Zip	Estab Telephone
4	Avita of Needham	nursing home	880 Greendale Avenue	02492	781-444-2266
4	Beth Israel Deac Hosp Kitch	hospital	148 Chestnut Street	02492	781-453-3014
4	Briarwood Healthcare Center	nursing home	150 Lincoln Street	02492	781-449-4040
4	Fuji Steakhouse	sushi, full service restaurant	1430 Highland Ave.	02492	(781) 726-7658
4	Gari Restaurant	sushi, full service restaurant	1019 Great Plain Ave.	02492	781-455-8882
4	KinderCare	preschool	1000 Highland Ave.	02494	781-449-0774
4	Linden/Chambers Meal Site	susceptible population	5 Chambers St.	02492	617-972-
4	New Garden Restaurant	sushi, full service restaurant	40 Chestnut Place	02492	(781) 449-1698
4	North Hill - Central Kitchen	nursing home	865 Central Ave.	02492	781-433-6281
4	North Hill Bistro (Café)	nursing home	865 Central Ave.	02492	781-444-9910
4	North Hill Main Kitchen	nursing home	865 Central Ave.	02492	781-444-9910
4	North Hill-Central Ave. Bakery and Café	nursing home	865 Central Avenue	02492	781-433-6281
4	One Wingate Way	nursing home	235 Gould St.	02492	781-707-9525
4	One Wingate Way (kitchenette)	nursing home	235 Gould St.	02494	781-455-
4	Otrada Adult Day Care Center	nursing home	185 Second Ave.	02494	781-433-9855
4	Residences at Wingate	nursing home	235 Gould St.	02494	781-455-9080
4	Sudbury Farms/Hissho Sushi	sushi, supermarket	1177 Highland Ave.	02492	781-449-9180
4	Wingate at Needham	nursing home	589 Highland Ave.	02494-	781-455-9090
	Frosty Ice Cream/Boston Festive	mobile; temporary	78 Kendrick St.	02135	617-799-8413
	Pushcarts Unlimited/Bob Daniels	mobile; temporary	45 Cherry Place	02465	617-527-1000
	Sam's Hot Dog Cart	mobile; temporary	27 Cynthia Road	02494	617-513-6692
	Closed The Center Café (replaced by The James)		1027 Great Plain Ave.	02492	781-455-8800
	Closed Petit Robert Bistro (replaced with Capella Restaurant)		45 Chapel Street	02492	781-559-0532

1st floor plan

1st floor plan

1st floor plan

1st floor plan

1st floor plan

1st floor plan

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5

4

3

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1

1st floor plan

Sales person #1, Service dealer #1, Sales person #2, Service dealer #2, Sales person #3, Service dealer #3, Sales person #4, Service dealer #4

1st floor plan

Sales person #2, Service dealer #2, Sales person #3, Service dealer #3, Sales person #4, Service dealer #4

1st floor plan

Sales person #3, Service dealer #3, Sales person #4, Service dealer #4

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John Dennehy
ROSEMARY ST.
NEEDHAM, MA 02492
[Sold-To: Address, City]
[Sold-To: Address, Zip]

Rosemary St.

67578/146395

1st floor

1st floor

1st floor plan

1st floor plan

1st floor plan

Scale: ~1:67

NEEDHAM PUBLIC HEALTH DIVISION



March 23, 2018

Tobacco Compliance Checks



The Needham Public Health Division, in conjunction with the Needham Police Department conducts quarterly tobacco compliance checks in the Town to enforce the Needham Board of Health Tobacco Regulation (Article 1). Under Article 1, no tobacco permit holder in the Town may sell to persons less than 21 years of age. Article 1 § D.3 reads, “Each person selling or distributing tobacco products shall verify the age of the purchaser by means of government-issued photographic identification containing the bearer’s date of birth that the purchaser is twenty-one (21) years or older. Verification is required for any person under the age of 27.” There are currently 11 permitted tobacco vendors in the Town. During the compliance checks, the Environmental Health Agent and a Needham Police Officer work with a local student under 21 years of age. The student attempts to buy tobacco products from each tobacco permit holder without an ID. If sales are made to the student, the tobacco permit holder is subject to the following penalties under Article 1 § S.:

- a) In the case of a first violation, a fine of three hundred dollars (\$300.00) and the Tobacco Product Sales Permit shall be suspended for seven (7) consecutive business days.
- b) In the case of a second violation within 36 months of the date of the first violation, a fine of three hundred dollars (\$300.00) and the Tobacco Product Sales Permit shall be suspended for fourteen (14) consecutive business days.
- c) In the case of a third violation within 36 months of the date of the first violation, a fine of three hundred dollars (\$300.00) and the Tobacco Product Sales Permit shall be suspended for thirty (30) consecutive business days.
- d) In the case of a fourth violation within 36 months of the date of the first violation, a fine of three hundred dollars (\$300.00) and the Tobacco Product Sales Permit shall be suspended for ninety (90) consecutive business days.
- e) In the case of a fifth violation or repeated, egregious violations of this regulation within a 36 month period, the Board of Health shall hold a hearing in accordance with subsection 4 of this section and shall permanently revoke a Tobacco Product Sales Permit.

For the March 23, 2018 compliance checks, a 19 year-old male student and a 23 year-old female from Olin College assisted with the compliance check. There were **no** sales made to an underage buyer. Attached is a complete summary detailing each compliance check.



<u>Establishment:</u>	Roche Bros. Supermarket, Inc.
<u>Type of Establishment:</u>	Chain
<u>Style of Establishment:</u>	Grocery Store
<u>Time:</u>	4:05 pm
<u>Purchaser asked for ID?:</u>	Yes
<u>Purchaser asked age?:</u>	No
<u>Sex of Clerk:</u>	Male
<u>Age of clerk:</u>	Young Adult
<u>Type of tobacco asked for:</u>	Marlboro Lights
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	The purchaser attempted a buy of cigarettes.

<u>Establishment:</u>	7-Eleven #32485B, 845 Highland Ave.
<u>Type of Establishment:</u>	Chain
<u>Style of Establishment:</u>	Convenience Store

<u>Time:</u>	4:45 pm
<u>Purchaser asked for ID?:</u>	Yes
<u>Purchaser asked for age?:</u>	No
<u>Sex of Clerk:</u>	Male
<u>Age of Clerk:</u>	Adult
<u>Type of tobacco asked for:</u>	Blu E-Cigarette original
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	The purchaser attempted a buy of e-cigarettes.

<u>Establishment:</u>	Great Plain Ave. Gas, Inc.
<u>Type of Establishment:</u>	Chain
<u>Style of Establishment:</u>	Gas Mini-Mart
<u>Time:</u>	4:45 pm
<u>Purchaser asked for ID?:</u>	Yes
<u>Purchaser asked for age?:</u>	No
<u>Sex of Clerk:</u>	Male
<u>Age of Clerk:</u>	Adult
<u>Type of tobacco asked for:</u>	Marlboro Reds
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	The purchaser attempted a buy of cigarettes.

<u>Establishment:</u>	Needham Service Center, Inc.
<u>Type of Establishment:</u>	Independent
<u>Style of Establishment:</u>	Gas Mini-Mart
<u>Time:</u>	4:28 pm
<u>Purchaser asked for ID?:</u>	Yes
<u>Purchaser asked for age?:</u>	No
<u>Sex of Clerk:</u>	Male
<u>Age of Clerk:</u>	Adult
<u>Type of tobacco asked for:</u>	Marlboro Lights
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	The purchaser attempted a buy of cigarettes.

<u>Establishment:</u>	Needham Center Fine Wine
<u>Type of Establishment:</u>	Independent
<u>Style of Establishment:</u>	Liquor Store
<u>Time:</u>	4:35 pm

<u>Purchaser asked for ID?:</u>	Yes
<u>Purchaser asked for age?:</u>	No
<u>Sex of Clerk:</u>	Male
<u>Age of Clerk:</u>	Adult
<u>Type of Tobacco Asked:</u>	Cigar
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	Participants asked for cigars and the clerk did not show any product because they came in as a group and the underage participant did not have an ID to verify his age. This location will only sell if all in a party have proper identification and are of-age.

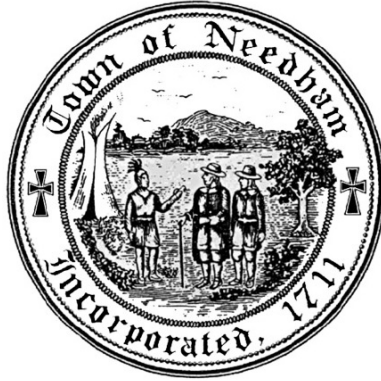
<u>Establishment:</u>	Sudbury Farms
<u>Type of Establishment:</u>	Chain
<u>Style of Establishment:</u>	Grocery Store
<u>Time:</u>	4:40 pm
<u>Purchaser asked for ID?:</u>	Yes
<u>Purchaser asked for age?:</u>	No
<u>Sex of Clerk:</u>	Male
<u>Age of Clerk:</u>	Adult
<u>Type of tobacco asked for:</u>	Marlboro Lights
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	The purchaser attempted a buy of cigarettes. The of-age participant was denied a sale due to an out-of-state ID.

<u>Establishment:</u>	7-Eleven #36044H, 173 Chestnut St.
<u>Type of Establishment:</u>	Chain
<u>Style of Establishment:</u>	Convenience Store
<u>Time:</u>	4:15 pm
<u>Purchaser asked for ID?:</u>	Yes
<u>Purchaser asked for age?:</u>	No
<u>Sex of Clerk:</u>	Male
<u>Age of Clerk:</u>	Adult
<u>Type of tobacco asked for:</u>	Blu E-cigarette original
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	The purchaser attempted an e-cig buy. The of-age participant had an out of state license and clerk asked if she had an MA ID. He did sell to her but no sale was made to the underage participant.

<u>Establishment:</u>	Needham Heights Auto. Shell, 875 Highland Ave
<u>Type of Establishment:</u>	Chain
<u>Style of Establishment:</u>	Gas Mini-Mart
<u>Time:</u>	4:50 pm
<u>Purchaser asked for ID?:</u>	Yes
<u>Purchaser asked for age?:</u>	No
<u>Sex of Clerk:</u>	Male
<u>Age of Clerk:</u>	Adult
<u>Type of tobacco asked for:</u>	Marlboro Red
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	The purchaser attempted a buy of cigarettes.

<u>Establishment:</u>	Speedway #2472
<u>Type of Establishment:</u>	Chain
<u>Style of Establishment:</u>	Gas Mini-Mart
<u>Time:</u>	4:57
<u>Purchaser asked for ID?:</u>	Yes
<u>Purchaser asked for age?:</u>	No
<u>Sex of Clerk:</u>	Female
<u>Age of Clerk:</u>	Young Adult
<u>Type of tobacco asked for:</u>	Blu E-cig
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	The purchaser attempted a buy of an e-cigarette. The clerk utilized the ID scanner for the of-age participant.

<u>Establishment:</u>	Fernandes Mini-Mart
<u>Type of Establishment:</u>	Chain
<u>Style of Establishment:</u>	Gas Mini-Mart
<u>Time:</u>	4:50 pm
<u>Purchaser asked for ID?:</u>	No
<u>Purchaser asked age?:</u>	No
<u>Sex of Clerk:</u>	Male
<u>Age of Clerk:</u>	Adult
<u>Type of tobacco asked for:</u>	Blu E-Cigarette Original
<u>Outcome:</u>	No Sale Made
<u>Notes:</u>	The purchaser attempted a buy of an e-cigarette.



Board of Health

Edward Cosgrove, PhD
Chair

Stephen Epstein, MD, MPP
Member

Jane Fogg, MD, MPH
Vice Chair

ARTICLE 2

REGULATION GOVERNING COLLECTION AND DISPOSAL OF SOLID WASTE, RECYCLABLES, AND FOOD WASTE

SECTION 2.1 PURPOSE

The purpose of this regulation is to establish minimum requirements for the collection of Solid Waste and Recyclables in order to promote waste reduction, comply with State-mandated Waste Bans (310 CMR 19.017), and further the goals of the Town of Needham.

These regulations do not address the installation or management of dumpsters. These regulations also do not address the operation of the Needham RTS or food waste management operations.

The goal of this regulation is to ensure that:

- 2.1.1 Private Haulers providing the service of collecting Solid Waste, Recyclables, or Food Waste in Town do so in a manner that protects public health and environment;
- 2.1.2 There are fair and equitable rules for all Private Haulers providing collection service in Town;
- 2.1.3 All Private Haulers licensed to operate in Town are in compliance with state regulations (310 CMR 19.017) as well as commercial vehicle regulations (540CMR 4.05);
- 2.1.4 There is joint enforcement of the Waste Ban requirements by the municipality and all Private Haulers operating within the municipality. Municipalities and haulers work together to support the goals of the Solid Waste Master Plan and the Global Warming Solutions Act.
- 2.1.5 All residential customers are offered bundled service, such that they receive solid waste and recycling collection.
- 2.1.6 There is greater consistency across municipalities to promote clear operating guidelines for Private Haulers.

SECTION 2.2 AUTHORITY

These regulations are adopted by the Needham Board of Health, pursuant to its authority under Massachusetts General Laws, Chapter 111 Sections 31, 31A, 31B, 122 and 150A.

SECTION 2.3 DEFINITIONS

Acceptable Recycling Facility: shall mean the Needham RTS or a Materials Recovery Facility designed for the purpose of maximizing the recovery of materials for reprocessing or reuse or a transfer station that transfers materials to such a facility.

Acceptable Food Waste Handling Facility: shall mean the Needham RTS or a compost site or food handling facility approved and operating in compliance with the General Permit Provision of 310CMR 16.04.

Commercial Customers/Generators: shall mean all other property owners and occupants of any commercial, industrial, institutional, municipal, school, or mixed use building within the Town.

Divertable Materials: shall mean all types of items that can be diverted or recovered from the waste stream in the Needham RTS.

Food Waste: shall mean material generated from human or animal food production, preparation and consumption activities and which consists of, but is not limited to, fruits, vegetables, grains, and fish and animal products and byproducts. This does not include the collection or storage of fats, oils, and grease which are regulated separately.

Hazardous Waste: shall mean any waste or material, in any amount, which is defined, characterized or regulated as hazardous by or pursuant to federal or state laws. For purposes of this Regulation, the term "Hazardous Waste" shall also include, but not be limited to, motor oil, gasoline other flammable liquids, caustic or poisonous liquids or solids, oil based paint, asbestos, Cathode Ray Tubes (CRTs), televisions, computer monitors, lead batteries, fluorescent light bulbs, explosives and ammunition.

Leaf and Yard Waste: shall mean deciduous and coniferous seasonal deposition (e.g., leaves), grass clippings, weeds, bush trimmings, garden materials and brush, branches, and tree limbs (size?) and any other compostable materials that are allowed to be delivered to the Needham RTS.

Needham RTS: shall mean the Recycling and Transfer Station located in the Town of Needham.

Recyclables: shall mean that subset of the Waste Banned Materials that are routinely recyclable materials such as ferrous and non-ferrous metals, glass & metal containers, recyclable paper, cardboard and paperboard, and single resin narrow-necked plastics containers.

Residential Customers/Generators: shall mean property owners and occupants of single and multi-family dwellings, condominiums, public housing, and mobile homes within the Town.

Permitted Hauler: shall mean any Private Hauler who has obtained a valid hauler permit from the Town.

Private Hauler: shall mean any person or entity providing collection of Solid Waste, Recyclables and/or Food Waste or other type of waste collection for hire on a routine basis within the Town.

Prohibited Materials: shall mean mercury-added products as defined in the Mercury Management Act (Ch 190 of the Acts of 2006), including but not limited to thermostats, mercury thermometers, fluorescent light bulbs, and elemental mercury. These items are prohibited from disposal in Solid Waste.

Salvaging: shall mean picking through, and/or picking through in order to remove, materials previously deposited in any Solid Waste, Food Waste, or Recyclables container at the Needham RTS. All items

dropped at RTS are “town property” and not to be taken by individuals except at the area defined as a swap shop.

Solid Waste: shall mean useless, unwanted or discarded non-recyclable solid wastes, excluding Waste Banned Materials, Prohibited Materials, and Hazardous Waste as defined herein.

Swap Shop: shall mean the building designated as the area for residents to drop off useful and still usable items for other residents to reuse.

Town: shall mean the Town of Needham.

Waste Banned Materials: shall mean all materials designated as banned from disposal in the Commonwealth of Massachusetts pursuant to 310 CMR 19.017: Waste Bans, including: asphalt pavement, brick & concrete, cathode ray tubes, clean gypsum wallboard, commercial food waste, ferrous and non-ferrous metals, glass & metal containers, lead acid batteries, leaves and yard waste, recyclable paper, cardboard and paperboard, single resin narrow-necked plastics, treated and untreated wood and wood waste (banned from landfills only), white goods (large appliances), and whole tires (banned from landfills only).

SECTION 2.4 MANDATORY RECYCLING

2.4.1 In order to protect the environment, promote recycling and comply with Massachusetts Waste Ban regulations (310CMR 19.017), the Town hereby establishes a requirement and minimum standard for mandatory separation of Recyclables from other materials collected as Solid Waste. This requirement applies to all Residential Customers/Generators and Commercial Customer/Generators in the Town.

2.4.2 The Town will inform all Residential Customers/Generators and Commercial Customer/Generators at least once per year that recycling is mandatory.

SECTION 2.5 PRIVATE HAULER PERMITS

2.5.1 Private Haulers may be permitted to collect Solid Waste, Recyclables or Food Waste, providing such collection is performed in accordance with these regulations.

2.5.2 Private Haulers shall obtain and annually renew a permit from the Board of Health before engaging in the collection of Solid Waste, Recyclables, or Food Waste within the Town. There shall be a fee as per Article 17 of the Board of Health Regulations, Permit and License Fees, for each vehicle used in such service. The Board of Health may issue fines or revoke such license, upon receipt of evidence satisfactory to it that the Private Hauler has not complied with these regulations or such further regulations as may be adopted relative to the collection and disposal of Solid Waste, Recyclables, or Food Waste.

2.5.3 The initial permit application must be complete in order to be considered. Renewal applications will be due by March 20th. The Town will have 30 days to consider the application. Permits will be valid for 12 months and will expire on March 31st of the year unless the Private Hauler submits their permit renewal application and is approved.

SECTION 2.6

GENERAL PERMIT REQUIREMENTS

- 2.6.1 All Permitted Haulers must clearly display the name of the company on each vehicle operating in Town.
- 2.6.2 All Permitted Haulers must have a valid business license from the Town.
- 2.6.3 All Permitted Haulers must be in compliance with applicable federal, state and local laws.
- 2.6.4 Each vehicle must meet all Department of Transportation safety requirements at all times.
- 2.6.5 All materials must be securely contained in the vehicle. Littering or leaking shall be considered a violation of the permit.
- 2.6.6 All Permitted Haulers shall collect only Solid Waste for disposal purposes. They may collect Recyclables for management at an Acceptable Recycling Facility. They may collect Food Waste for management at an Acceptable Food Waste Facility. It is the responsibility of the Permitted Hauler to educate their customers about Waste Banned Materials, Prohibited Materials, and Hazardous Wastes. It is the responsibility of the Permitted Hauler to inform all customers that they will refuse to collect Solid Waste mixed with Waste Banned Materials, Prohibited Materials or Hazardous Wastes that are visible to the driver/collector.
- 2.6.7 All Permitted Haulers that serve Residential Customers/Generators shall deliver Solid Waste to the Needham RTS at such time as the Health Department notifies all haulers of this requirement unless the Private Hauler receives an exemption.
- 2.6.8 All Permitted Haulers that collect Food Waste shall deliver such Food Waste to the Needham RTS at such time that the facility is approved and ready to receive it unless the Private Hauler receives an exemption from this requirement.
- 2.6.9 In the event that the Permitted Hauler refuses to collect any materials from any customer, they will leave a written notification indicating the reason(s) for refusal to collect the Solid Waste, Recyclables, or Food Waste. In addition, the Hauler will advise the Board of Health about all customers who have received a rejection. The Board of Health will, where possible, assist the Private Hauler with enforcement of the Mandatory Recycling provision (Section 2.4).
- 2.6.10 Private Haulers that collect only Recyclables must also be permitted, but are not required to collect Solid Waste. They must deliver Recyclables to an Acceptable Recycling Facility.
- 2.6.11 Private Haulers that collect only Food Waste must also be permitted, but are not required to collect Solid Waste. They must deliver Food Waste to an Acceptable Food Waste Facility.

SECTION 2.7

BUNDLED SERVICE REQUIREMENT

- 2.7.1 Private Haulers that collect Solid Waste from Residential Customers/Generators must provide bundled service for the collection of both Solid Waste and Recyclables. The pricing of their service must be set at a rate that reflects the cost of providing both services. The Private Hauler may itemize the invoice to show separate costs for Solid Waste and Recycling collection, but in no instance can a Private Hauler offer only collection of Solid Waste to a Residential Customer/Generator. Solid Waste and Recycling services for all Residential

Customers/Generators must be provided by the same Private Hauler unless otherwise pre-approved by the Board of Health.

2.7.2 All Haulers collecting Solid Waste from Residential Customers/Generators (as defined above) that live in condominium, mobile home complexes or other multi-family complexes must provide appropriately-sized, clearly marked, adjacent or nearby containers for both Solid Waste, Recyclables, and Food Waste, if collected separately.

2.7.3 There is no bundled service requirement for Commercial Customers/Generators. The Hauler can provide either Solid Waste or Recyclables collection or both. If the Private Hauler is not providing collection of both Solid Waste and Recyclables, they shall provide the name of the Commercial Customer/Generator to the Town Board of Health so the Town can follow up to ensure that those Customers are receiving both services and are complying with the Waste Bans.

2.7.4 An organization that wishes to be considered for an exemption to these regulations shall submit their request in writing to the Board of Health.

SECTION 2.8 INSPECTION

The Board of Health or its designee is authorized to inspect a Hauler's truck annually and at any time. The Board of Health also has the right to request weight slips or confirmation of disposal of Solid Waste or management of Recyclables or Food Waste. At the time of inspection, the company will be expected to show proof of valid inspection, registration, and appropriate safety equipment for each vehicle in compliance with 540CMR 4.05 Procedures for Inspection of Commercial Motor Vehicles.

SECTION 2.9 ENFORCEMENT

Enforcement of this regulation shall be by administrative hearing before Board of Health or if needed by criminal complaint in the district court and/or non-criminal disposition ticket per M.G.L. Chapter 40, § 21D. Agents of the Board of Health or its designee shall have the power to enforce the provisions of this regulation.

SECTION 2.10 PENALTIES

In the event that a Hauler fails to follow these regulations, the Board of Health reserves the right to impose reasonable fines or revoke the permit to operate within the Town/City, subject to the Appeal Provisions described below.

- | | |
|-------------------------|----------------------|
| (a) First offense | Warning |
| (b) Second offense | \$ 200 fine |
| (c) Third offense | \$ 500 fine |
| (d) Subsequent offenses | Revocation of permit |

Each day of failure to comply with the regulations shall constitute a separate violation.

SECTION 2.11 APPEAL PROVISIONS

Any Hauler cited for a violation of these regulations may appeal such citation by filing a written notice of appeal with the Board of Health within seven (7) days, exclusive of Saturdays, Sundays and legal holidays, from the date of said citation. A hearing will be held within 60 days from the date of the filing of the appeal. Written notice of the hearing date will be delivered to the applicant at least two (2) weeks

prior to the scheduled date. The hearing will be conducted in accordance with the established procedures of the Board of Health.

SECTION 2.12 LEGAL PROVISIONS, NON-RETALIATION, SEVERABILITY

2.12.1 No person or employer shall discharge, refuse to hire, refuse to serve or in any manner retaliate or take any adverse personnel action against any employee, applicant, customer or person because such employee, applicant, customer or person takes any action in furtherance of the enforcement of this Article or exercises any rights conferred by this Article.

2.12.2 If any provision, clause, sentence, paragraph or word of this Article or the application thereof to any person, entity or circumstances shall be held invalid, such invalidity shall not affect the other provisions of this article which can be given effect without the invalid provisions or application and to this end the provisions of this Article are declared severable.

SECTION 2.13 OPERATION AT THE NEEDHAM RTS

2.13.1 Operation of the Needham RTS shall be conducted in accordance with federal and state regulations, including, but not limited to: the Massachusetts Department of Environmental Protection's Solid Waste Management Facility Regulations--310 CMR 19.000.

2.13.2 All users of the Needham RTS shall display a current vehicular sticker permanently attached to their vehicle. Permitted Haulers will have a current commercial sticker on each vehicle, provided by the Town Treasurer's office.

2.13.3 Only Solid Waste or Recyclables originating in Town shall be deposited at the Needham RTS, unless written approval is provided by the Board of Health.

2.13.4 Supervision of the dumping and disposal of Solid Waste at the Needham RTS shall be under the Public Works Department, including the right to collect a reasonable tip fee from Permitted Haulers. All Solid Waste, Recyclables and/or Food Waste shall be deposited in a manner and at a location as directed by the Needham RTS staff.

2.13.5 All Permitted Haulers shall have access to the Needham RTS during regular operating hours as long as they comply with all of the above requirements plus all operating standards and requirements specific to the Needham RTS and/or outlined by Needham RTS staff.

2.13.6 The hours of the Needham RTS shall be set by the Department of Public Works. Dumping outside of these hours is prohibited.

2.13.7 Scavenging of material shall not be allowed.

2.13.8 Permitted Haulers shall comply with the proper sorting of Recyclables, Food Waste and other Divertable Materials to the maximum extent feasible. All drivers shall be aware of the list of acceptable wastes allowed at the Needham RTS and the definition of Waste Banned Materials, Prohibited Materials, and Hazardous Materials. Permitted Haulers shall educate their customers about keeping Waste Banned Materials, Prohibited Materials, and Hazardous Materials out of Solid Waste and inform them of options for recycling or other proper management of such Waste Banned Materials.

2.13.9 Permitted Haulers shall comply with all operational requests of the Town staff and shall submit evidence or answer any reasonable questions concerning the origin of contents of such vehicle as the staff may request.

2.13.10 Trucks without proper covers or that are leaking will not be allowed to enter the Needham RTS.

SECTION 2.14 EFFECTIVE DATE

These regulations were formally adopted by the Needham Board of Health on _____, and took effect on January 1, _____.

Public meetings about this regulation occurred in _____, _____ 2017, and _____ . A public hearing occurred in _____. This regulation was approved by a vote of the Needham Board of Health on _____ and shall take effect on _____.

A notice and summary of the regulation was posted by the Needham Town Clerk, was posted on the Needham Public Health Division's website, and was published in a newspaper in circulation in the Town of Needham. Copies of this regulation have also been filed with the Needham Town Clerk and the Massachusetts Department of Environmental Protection.

MARIJUANA ESTABLISHMENT ARTICLES

ARTICLE 43: AMEND ZONING BY-LAW – MARIJUANA ESTABLISHMENTS

Whereas Needham being a town in which the majority of voters voted in the negative on question 4 on the 2016 state election ballot, entitled “Legalization, Regulation, and Taxation of Marijuana” the Planning Board offers the following amendment. To see if the Town will vote to amend the Needham Zoning By-Law, as follows:

- (1) In Section 1.3, Definitions, by adding the following term and definition in the appropriate alphabetical location as follows:

“Marijuana Establishment: Any type of “marijuana establishment” as defined in G.L. c.94G, Section 1, including marijuana cultivators (including craft marijuana cultivator cooperatives), independent testing laboratories, marijuana product manufacturers, marijuana retailers (including delivery-only retailers and social consumption operation retailers whether as a primary use or mixed or accessory use), or any other type of licensed marijuana-related business (excluding Medical Marijuana Treatment Centers as defined below).”

- (2) In Section 3.1, Basic Requirements, Subsection 3.1.2, Prohibited Uses, by inserting at the end of the first paragraph a new sentence, which shall read as follows:

“Use of any premises in any district as a Marijuana Establishment is hereby prohibited.”

- (3) In Section 3.2, Schedule of Use Regulations, Subsection 3.2.1, Uses in the Rural Residence-Conservation, Single Residence A, Single Residence B, General Residence, Apartment A-1, Apartment A-2, Apartment A-3, Institutional, Industrial, and Industrial-1 Districts, by inserting immediately below the row that reads “Medical Marijuana Treatment Center” a new entry, which shall read as follows:

“Use	<u>RRC</u> <u>SRA</u>	<u>SRB</u>	<u>GR</u>	<u>A-1,2</u> <u>&3</u>	<u>I</u>	<u>IND</u>	<u>IND-1</u>
Marijuana Establishment	N	N	N	N	N	N	N”

- (4) In Section 3.2, Schedule of Use Regulations, Subsection 3.2.2, Uses in the Business, Chestnut Street Business, Center Business, Avery Square Business and Hillside Avenue Business Districts, by inserting immediately below the row that reads “medical clinic” a new entry, which shall read as follows:

“Use	<u>B</u>	<u>CSB</u>	<u>CB</u>	<u>ASB</u>	<u>HAB</u>
Marijuana Establishment	N	N	N	N	N”

Or take any other action relative thereto.

INSERTED BY: Planning Board

FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

Article Information: The issues around the legalization of marijuana in Massachusetts, first medicinal in 2013, followed by recreational in 2016, continue to require municipal action in order to appropriately regulate this new use at the local level. Currently, the Needham Zoning By-Law permits a Medical Marijuana Treatment Center in the Mixed Use-128 District and in the Industrial-1 District where marijuana may be grown, processed or sold and an Off-Site Medical Marijuana Dispensary in the Highland Commercial-128 District where marijuana may be sold but not grown or processed. At the present time there is one Medical Marijuana Treatment Center in Needham, located at 29 Franklin Street, where medicinal marijuana is sold. Recreational marijuana establishments in Needham are currently prohibited under a zoning moratorium adopted at the May 2017 Annual Town Meeting, which is set to expire on December 31, 2018. The Massachusetts Cannabis Control Commission (CCC) has finalized its regulations, which provide that the CCC will begin accepting applications for recreational (adult use) marijuana establishments on April 1, 2018. Since Needham adopted its moratorium before the CCC was to begin licensing non-medical marijuana establishments, no recreational establishments may be permitted in Needham during the moratorium and such establishments would be prohibited under the Needham Zoning Bylaw as of January 29, 2018 if this amendment takes effect.

On November 8, 2016, Massachusetts voters approved Question 4 legalizing the recreational use of marijuana (Chapter 334 of the Acts of 2016), but in Needham, the vote on Question 4 was 8,203 in favor and 9,964 against. On July 28, 2017 the Massachusetts State Legislature approved “An Act to Ensure Safe Access to Marijuana” which allowed municipalities that voted against Question 4 to prohibit marijuana establishments by adopting a by-law or by-laws for such purposes. Articles 43 and 44 are proposed to carry out and codify the action taken by the voters of the Town of Needham on Question 4 by prohibiting all types of recreational marijuana establishments in all districts of the Town, including cultivation, testing, product manufacturing, retail and any other type of recreational marijuana-related business in Needham. The amendment serves just to prohibit recreational marijuana establishments from locating in Needham and will not affect any other aspects of the recent legalization of recreational and medicinal marijuana. Personal possession and use by adults of marijuana, growing a limited number of plants at home for personal use, and the ability of licensed and regulated Medical Marijuana Treatment Centers and Off-Site Medical Marijuana Dispensaries to locate in Needham would all be unaffected by these changes.

ARTICLE 44: AMEND GENERAL BY-LAW/MARIJUANA ESTABLISHMENTS

To see if the Town will vote to amend the Town’s General Bylaws by adding a new Section 3.10, Marijuana Establishments, as follows:

“Section 3.10 Marijuana Establishments All types of “marijuana establishments” as defined in G.L. c.94G, §1, including marijuana cultivators, independent testing laboratories, marijuana product manufacturers, marijuana retailers or any other types of licensed marijuana-related businesses, shall be prohibited within the Town of Needham. Exempt from the provisions of this prohibition are medical marijuana treatment centers operated under a medical use marijuana license in accordance with the provisions of G.L. c. 94I,” or take any action relative thereto.

INSERTED BY: Board of Selectmen

FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

Article Information: Included in this warrant under Article 43 is a proposal to amend the Zoning By-Law to prohibit the location of marijuana establishments in any zoning district in the Town of Needham. Chapter 55 of the Acts of 2017, An Act to Ensure Safe Access to Marijuana, is ambiguous as to whether a by-law prohibiting marijuana establishments in the Town must be zoning or general in nature. As such, Town Counsel has recommended that the Town adopt both a general and zoning by-law to enact such a prohibition.

GENERAL ARTICLES

ARTICLE 50: HOME RULE PETITION/AMEND TOWN CHARTER

To see if the Town will vote to authorize the Board of Selectmen to petition the General Court, in compliance with Clause (1), Section 8 of Article LXXXIX of the Amendments of the Constitution, to the end that legislation be adopted precisely as follows;

Be it enacted by the Senate and House of Representatives in the General Court assembled, and by authority of same, as follows:

SECTION 1. Chapter 403 of the acts of 1971, as most recently amended by Chapter 114 of the Acts of 2015 be amended as follows:

1. By striking out the terms “selectmen” and “board of selectmen” wherever they appear and inserting in place thereof the term “select board”.
2. In Section 7. Town Meeting Members at Large, by striking out the word “chairmen” and inserting in place thereof the word “chair” and further amend the section by inserting at the end of the second paragraph of said Section 7 the following sentence: “The designation as a town meeting member at large under clause (e) of the first paragraph of this section shall apply to the chair of the elected board as of the tenth day following the annual town election.”
3. By striking out Section 16 of the Charter and inserting in place thereof the following section:

“Section 16. Select Board. There shall be a select board for the town consisting of 5 members elected at each annual town election for terms of 3 years. The select board is the entity historically known as the board of selectmen, and possesses all the duties, authorities, and legal rights and responsibilities of the Town of Needham’s board of selectmen. The select board shall continue to have and exercise all the powers and duties vested in boards of selectmen by the laws of the commonwealth or by vote of the town, except as otherwise provided herein. For the purposes of the charter and the by-laws of the town, the term “selectmen” or “board of selectmen” shall mean select board.

Members of the select board may be addressed as “select board member,” or “board member,” “selectwoman,” or “selectman.”

The select board shall have the general authority to execute the civil defense laws within the town and to make any declaration of emergency required by law.”

4. In Section 19, Other Elected Officers, by striking out the words “3 members of the board of health for a term of 3 years” and inserting in place thereof the words “5 members of the board of health for a term of 3 years.”

SECTION 2. At the annual town election in 2019 the two additional positions on the board of health shall be placed on the ballot. The candidate receiving the most votes shall be elected for a term of 3 years. The candidate receiving the second most votes will be elected for a term of 2 years. Thereafter each position shall be for a term of 3 years.

SECTION 3. This act shall take effect upon its passage.”

Or take any other action relative thereto.

INSERTED BY: Board of Selectmen

FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

Article Information: *There are three facets of this proposed home rule petition: to clarify the designation of Town Meeting Members at large, to transition to gender-neutral language, and to expand the Board of Health from three members to five members. The designation of Town Meeting Member at Large applies to the chair of an elected board other than the Commissioners of Trust Funds. Because the Town election is held prior to the Annual Town Meeting, and the various boards and committees have different traditions as to when they elect a new chair, the proposed language would clarify that the designation as Town Meeting Member at Large will apply to the chair of the elected board as of the tenth day following the election.*

The Board of Selectmen adopted a goal to review the Town By-Law and Charter to determine whether there is a need to update the language to eliminate reference to a single gender. The Board held a hearing on the subject of changing the name of the Board from “Board of Selectmen” to “Select Board,” and feedback was overwhelmingly positive. The proposed home rule petition would make that change. Finally, the Board of Health has requested an expansion of its membership from three (3) elected members to five (5) elected members. Such an expansion would help Board of Health members plan, discuss, and work collaboratively, augment the available training and professional experience level, and provide more resources and expertise with which to accomplish the Board’s mission.

What, if any, health effects will result from a couple of small microwave dishes about 100 feet up in the air?

Proposed Fire and Police Radio System Plan:

Improve emergency communication by upgrading radio communication equipment to use microwave and/or fiber to connect all radio sites using IP/Ethernet.

Proposed antenna:

High performance parabolic reflector antenna: operating frequency band: 17.7 – 19.7 GHz

Microwaves are a form of low-frequency electromagnetic radiation that is non-ionizing.¹ Radiofrequency (RF) radiation encompasses microwaves and radio waves. Wave lengths from microwaves are smaller and at a higher frequency than radio waves, but larger than infrared radiation. Non-ionizing radiation does not damage DNA in cells. RF waves can produce heat and cause burns when absorbed in high amounts by body tissues. No biological connection between radiofrequency radiation and the development of cancer has been found.²

ELECTROMAGNETIC SPECTRUM

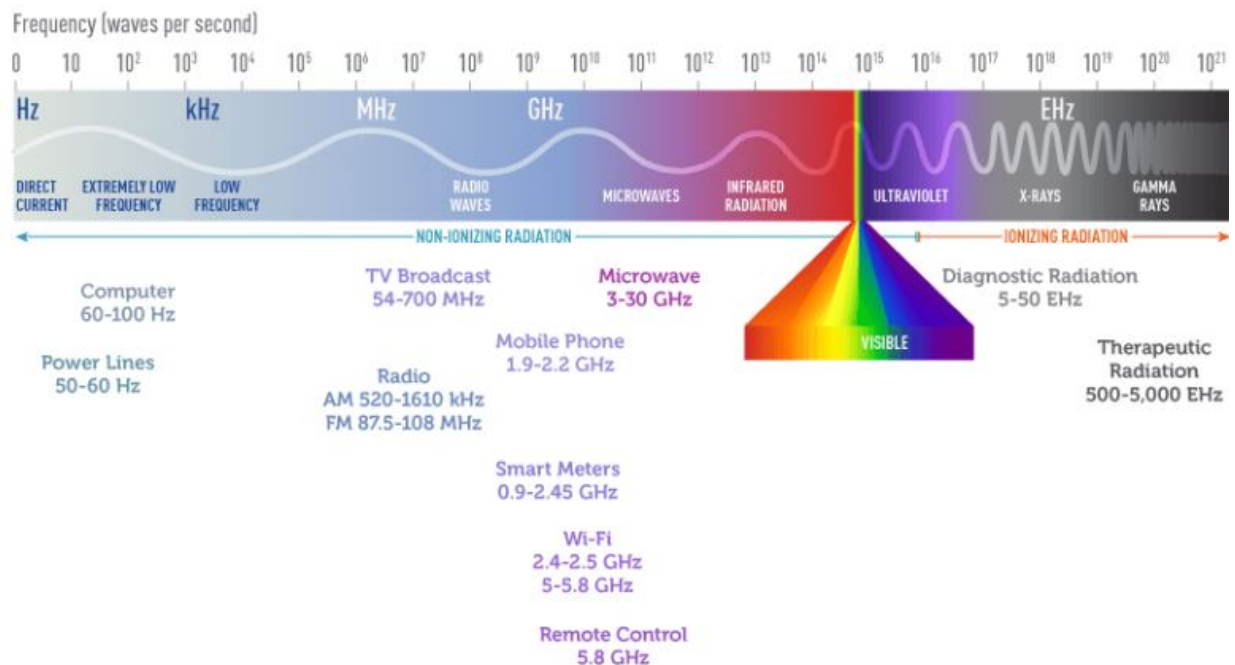


Image: National Cancer Institute.

¹ Microwaves, Radio Waves, and Other Types of Radiofrequency Radiation. American Cancer Society. Available from https://www.cancer.org/cancer/cancer-causes/radiation-exposure/radiofrequency-radiation.html#additional_resources

² National Cancer Institute. Electromagnetic fields and cancer. National Institutes of Health. <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet>

Microwave Communication Transmission

Microwaves can travel about the distance from the antenna to the horizon.³ This microwave line-of-sight can be affected by changes in terrain, the atmosphere, and climate conditions. Parabolic dish antennas direct microwaves in a narrow beam (similar to a spot light) and receive microwaves from one direction. The proposed high performance parabolic reflector antennas in Needham will be positioned between 100ft – 200ft high to have an unobstructed line of sight between the antennas. The loop configuration of the antennas is designed to ensure that the system will continue to send and receive transmissions if one path breaks down. Since the antennas will be at least 100 feet off the ground, direct human exposure to the microwave beam of transmission should not occur. Consequently, health concerns of microwave radiation exposure are low.

Loop configuration of the parabolic antennas:

Birds Hill Water Tank

- Microwave radio and antenna pointing to HQ
- Microwave radio and antenna pointing to Dunster

Radio Equipment Room

- Microwave radio and antenna pointing to Birds Hill
- Microwave radio and antenna pointing to RTS

Dunster Water Tank

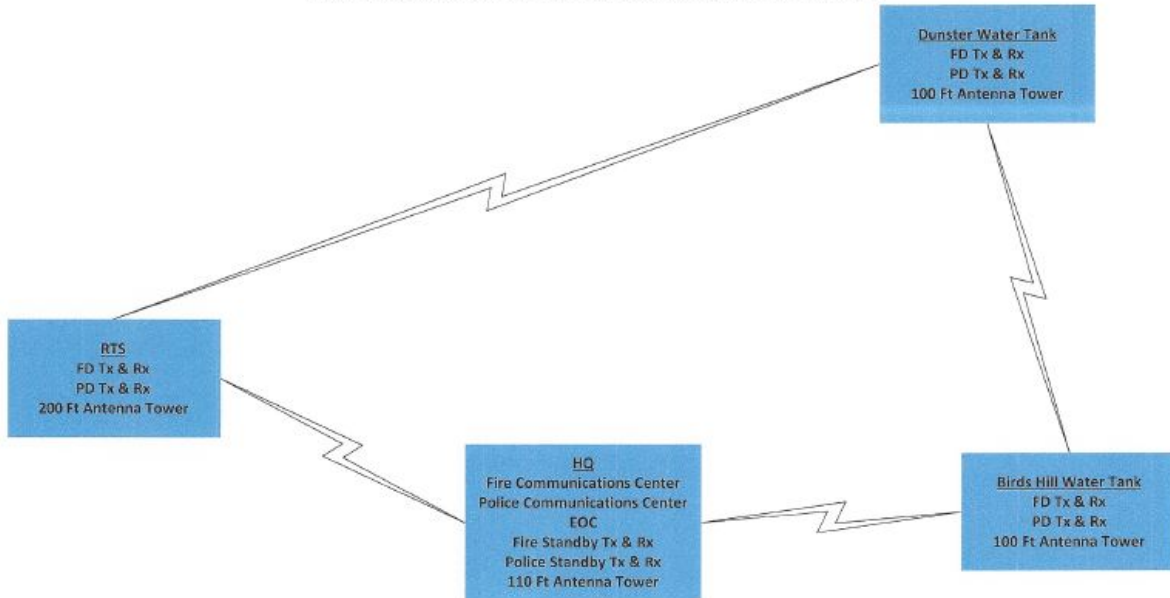
- Microwave radio and antenna pointing to RTS
- Microwave radio and antenna pointing to Birds Hill

RTS Site

- Microwave radio and antenna pointing to Dunster
- Microwave radio and antenna pointing to HQ

³ Garlington, Tom. Microwave Line-of-Site Transmission Engineering. U.S. Army Information Systems Engineering Command (USAISEC), Transmission Systems Directorate, 2006. Accessed Jan. 31, 2018 from Research Gate, https://www.researchgate.net/publication/228758256_Microwave_Line-of-Sight_Transmission_Engineering

PROPOSED FIRE & POLICE RADIO SYSTEM
WITH LOOP MICROWAVE FOR SITE CONNECTIVITY
FOR COVERAGE MAPS 32 & 33
WITH ANTENNA SUPPORT STRUCTURE HEIGHTS



Tower Heights Based on Drcne Survey of Microwave Paths

Petition to Deny Proposed Zoning Amendments & Antenna Installations



[Ben Ostrowski](#) started this petition to [Needham Residents](#)

We are writing to officially petition **against** the proposed zoning amendments, subsequently preventing radio antenna installations in residential neighborhoods (specifically the Birds Hill & Dunster Water Tanks). We strongly object based on the following grounds:

- o **Property Values:** Studies have shown that large antenna towers in the vicinity of a residential property can decrease home values by as much as 20%, and produce additional hardships for obtaining mortgage approvals (must be disclosed to lender when revealed in appraisal process). This reduction in property value also creates a loss in tax revenue for the county, both at time of sale and perpetually.
- o **Aesthetics:** A 100+ foot monopole would be an incredible eyesore, especially in confined areas that are already dominated by a 2.5 million gallon capacity tank consuming 29,845.13 cubic feet (Birds Hill) & a 1.5

million gallon capacity tank consuming 19,438.60 cubic feet (Dunster). The additional structure would further decrease aesthetics for current residents, and provide an additional deterrent to potential homebuyers.

- o **Health Concerns:** Although The Telecommunication Act of 1996 prohibits towns from denying antenna tower permits due to health concerns, numerous studies have since shown significant increase of cancer cases in residents living in close vicinity of a communication tower. Additionally, a comprehensive Impact Survey needs to be conducted to determine potential effect on town water supplies (extremely close proximity to tanks). Even without admission of physical health concerns, there is a negative association between towers and health risk assumptions...providing even further detriment to real estate value.
- o **Future Commercial Use:** The proposed monopole antenna is "intended" for town communication purposes only, but residents are concerned about future/expanded utilization. More specifically, the town can reverse their decision and offer space on the tower for commercial use (in order to increase town revenue). Said expansion would exacerbate all concerns already outlined.

Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays

B. Blake Levitt and Henry Lai

Abstract: The siting of cellular phone base stations and other cellular infrastructure such as roof-mounted antenna arrays, especially in residential neighborhoods, is a contentious subject in land-use regulation. Local resistance from nearby residents and landowners is often based on fears of adverse health effects despite reassurances from telecommunications service providers that international exposure standards will be followed. Both anecdotal reports and some epidemiology studies have found headaches, skin rashes, sleep disturbances, depression, decreased libido, increased rates of suicide, concentration problems, dizziness, memory changes, increased risk of cancer, tremors, and other neurophysiological effects in populations near base stations. The objective of this paper is to review the existing studies of people living or working near cellular infrastructure and other pertinent studies that could apply to long-term, low-level radiofrequency radiation (RFR) exposures. While specific epidemiological research in this area is sparse and contradictory, and such exposures are difficult to quantify given the increasing background levels of RFR from myriad personal consumer products, some research does exist to warrant caution in infrastructure siting. Further epidemiology research that takes total ambient RFR exposures into consideration is warranted. Symptoms reported today may be classic microwave sickness, first described in 1978. Non-ionizing electromagnetic fields are among the fastest growing forms of environmental pollution. Some extrapolations can be made from research other than epidemiology regarding biological effects from exposures at levels far below current exposure guidelines.

Key words: radiofrequency radiation (RFR), antenna arrays, cellular phone base stations, microwave sickness, nonionizing electromagnetic fields, environmental pollution.

Résumé : La localisation des stations de base pour téléphones cellulaires et autres infrastructures cellulaires, comme les installations d'antennes sur les toitures, surtout dans les quartiers résidentiels, constitue un sujet litigieux d'utilisation du territoire. La résistance locale de la part des résidents et propriétaires fonciers limitrophes repose souvent sur les craintes d'effets adverses pour la santé, en dépit des réassurances venant des fournisseurs de services de télécommunication, à l'effet qu'ils appliquent les standards internationaux d'exposition. En plus de rapports anecdotiques, certaines études épidémiologiques font état de maux de tête, d'éruption cutanée, de perturbation du sommeil, de dépression, de diminution de libido, d'augmentations du taux de suicide, de problèmes de concentration, de vertiges, d'altération de la mémoire, d'augmentation du risque de cancers, de trémulations et autres effets neurophysiologiques, dans les populations vivant au voisinage des stations de base. Les auteurs révisent ici les études existantes portant sur les gens, vivant ou travaillant près d'infrastructures cellulaires ou autres études pertinentes qui pourraient s'appliquer aux expositions à long terme à la radiation de radiofréquence de faible intensité « RFR ». Bien que la recherche épidémiologique spécifique dans ce domaine soit rare et contradictoire, et que de telles expositions soient difficiles à quantifier compte tenu des degrés croissants du bruit de fond des RFR provenant de produits de myriades de consommateurs personnels, il existe certaines recherches qui justifient la prudence dans l'installation des infrastructures. Les futures études épidémiologiques sont nécessaires afin de prendre en compte la totalité des expositions à la RFR ambiante. Les symptômes rapportés jusqu'ici pourraient correspondre à la maladie classique des micro-ondes, décrite pour la première fois en 1978. Les champs électromagnétiques non-ionisants constituent les formes de pollution environnementale croissant le plus rapidement. On peut effectuer certaines extrapolations à partir de recherches autres qu'épidémiologiques concernant les effets biologiques d'expositions à des degrés bien au-dessous des directives internationales.

Mots-clés : radiofréquence de faible intensité « RFR », les installations d'antennes, des stations de base pour téléphones cellulaires, la maladie classique des micro-ondes, les champs électromagnétiques non-ionisants, pollution environnementale.

[Traduit par la Rédaction]

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B.B. Levitt.¹ P.O. Box 2014, New Preston, CT 06777, USA.

H. Lai. Department of Bioengineering, Box 355061, University of Washington, Seattle, WA 98195, USA.

¹Corresponding author (e-mail: blakelevit@cs.com; bb1353355@gmail.com).

1. Introduction

Wireless technologies are ubiquitous today. According to the European Information Technology Observatory, an industry-funded organization in Germany, the threshold of 5.1 billion cell phone users worldwide will be reached by the end of 2010 — up from 3.3 billion in 2007. That number is expected to increase by another 10% to 5.6 billion in 2011, out of a total worldwide population of 6.5 billion.² In 2010, cell phone subscribers in the U.S. numbered 287 million, Russia 220 million, Germany 111 million, Italy 87 million, Great Britain 81 million, France 62 million, and Spain 57 million. Growth is strong throughout Asia and in South America but especially so in developing countries where landline systems were never fully established.

The investment firm Bank of America Merrill-Lynch estimated that the worldwide penetration of mobile phone customers is twice that of landline customers today and that America has the highest minutes of use per month per user.³ Today, 94% of Americans live in counties with four or more wireless service providers, plus 99% of Americans live in counties where next generation, 3G (third generation), 4G (fourth generation), and broadband services are available. All of this capacity requires an extensive infrastructure that the industry continues to build in the U.S., despite a 93% wireless penetration of the total U.S. population.⁴

Next generation services are continuing to drive the build-out of both new infrastructure as well as adaptation of pre-existing sites. According to the industry, there are an estimated 251 618 cell sites in the U.S. today, up from 19 844 in 1995.⁴ There is no comprehensive data for antennas hidden inside of buildings but one industry-maintained Web site (www.antennasearch.com), allows people to type in an address and all antennas within a 3 mile (1 mile = 1.6 km) area will come up. There are hundreds of thousands in the U.S. alone.

People are increasingly abandoning landline systems in favor of wireless communications. One estimate in 2006 found that 42% of all wireless subscribers used their wireless phone as their primary phone. According to the National Center for Health Statistics of the U.S. Centers for Disease Control (CDC), by the second half of 2008, one in every five American households had no landlines but did have at least one wireless phone (Department of Health and Human Services 2008). The figures reflected a 2.7% increase over the first half of 2008 — the largest jump since the CDC began tracking such data in 2003, and represented a total of 20.2% of the U.S. population — a figure that coincides with industry estimates of 24.50% of completely wireless households in 2010.⁵ The CDC also found that approximately 18.7% of all children, nearly 14 million, lived in households with only wireless phones. The CDC further found that one in every seven American homes, 14.5% of the population, received all or almost all of their calls via

wireless phones, even when there was a landline in the home. They called these “wireless-mostly households.”

The trend away from landline phones is obviously increasing as wireless providers market their services specifically toward a mobile customer, particularly younger adults who readily embrace new technologies. One study (Silke et al. 2010) in Germany found that children from lower socioeconomic backgrounds not only owned more cell phones than children from higher economic groups, but also used their cell phones more often — as determined by the test groups’ wearing of personal dosimetry devices. This was the first study to track such data and it found an interesting contradiction to the assumption that higher socioeconomic groups were the largest users of cell services. At one time, cell phones were the status symbol of the wealthy. Today, it is also a status symbol of lower socioeconomic groups. The CDC found in their survey discussed above that 65.3% of adults living in poverty or living near poverty were more likely than higher income adults to be living in households with wireless only telephones. There may be multiple reasons for these findings, including a shift away from cell phone dialogues to texting in younger adults in higher socioeconomic categories.

In some developing countries where landline systems have never been fully developed outside of urban centers, cell phones are the only means of communication. Cellular technology, especially the new 3G, 4G, and broadband services that allow wireless communications for real-time voice communication, text messaging, photos, Internet connections, music and video downloads, and TV viewing, is the fastest growing segment of many economies that are in otherwise sharp decline due to the global economic downturn.

There is some indication that although the cellular phone markets for many European countries are more mature than in the U.S., people there may be maintaining their landline use while augmenting with mobile phone capability. This may be a consequence of the more robust media coverage regarding health and safety issues of wireless technology in the European press, particularly in the UK, as well as recommendations by European governments like France and Germany⁶ that citizens not abandon their landline phones or wired computer systems because of safety concerns. According to OfCom’s 2008 *Communications Market Interim Report* (OfCom 2008), which provided information up to December 2007, approximately 86% of UK adults use cell phones. While four out of five households have both cell phones and landlines, only 11% use cell phones exclusively, a total down from 28% noted by this group in 2005. In addition, 44% of UK adults use text messaging on a daily basis. Fixed landline services fell by 9% in 2007 but OfCom notes that landline services continue to be strong despite the fact that mobile services also continued to grow by 16%. This indicates that people are continuing to use both landlines and wireless technology rather than choosing one over the other in the UK. There were 51 300 UK base station sites in

² http://www.eito.com/pressinformation_20100811.htm. (Accessed October 2010.)

³ <http://www.ctia.org/advocacy/research/index.cfm/AID/10377>. (Accessed October 2010.)

⁴ <http://www.ctia.org/advocacy/research/index.cfm/AID/10323>. (Accessed October 2010.)

⁵ <http://www.ctia.org/advocacy/research/index.cfm/AID/10323>. (Accessed October 2010.)

⁶ http://www.icems.eu/docs/deutscher_bundestag.pdf and http://www.icems.eu/docs/resolutions/EP_EMF_resolution_2APR09.pdf. (Accessed October 2010.)

the beginning of 2009 (two-thirds installed on existing buildings or structures) with an estimated 52 900 needed to accommodate new 3G and 4G services by the end of 2009.

Clearly, this is an enormous global industry. Yet, no money has ever been appropriated by the industry in the U.S., or by any U.S. government agency, to study the potential health effects on people living near the infrastructure. The most recent research has all come from outside of the U.S. According to the CTIA – The Wireless Association, “If the wireless telecom industry were a country, its economy would be bigger than that of Egypt, and, if measured by GNP (gross national product), [it] would rank as the 46th largest country in the world.” They further say, “It took more than 21 years for color televisions to reach 100 million consumers, more than 90 years for landline service to reach 100 million consumers, and less than 17 years for wireless to reach 100 million consumers.”⁷

In lieu of building new cell towers, some municipalities are licensing public utility poles throughout urban areas for Wi-Fi antennas that allow wireless Internet access. These systems can require hundreds of antennas in close proximity to the population with some exposures at a lateral height where second- and third-storey windows face antennas. Most of these systems are categorically excluded from regulation by the U.S. Federal Communications Commission (FCC) or oversight by government agencies because they operate below a certain power density threshold. However, power density is not the only factor determining biological effects from radiofrequency radiation (RFR).

In addition, when the U.S. and other countries permanently changed from analog signals used for television transmission to newer digital formats, the old analog frequencies were reallocated for use by municipal services such as police, fire, and emergency medical dispatch, as well as to private telecommunications companies wanting to expand their networks and services. This creates another significant increase in ambient background exposures.

Wi-Max is another wireless service in the wings that will broaden wireless capabilities further and place additional towers and (or) transmitters in close proximity to the population in addition to what is already in existence. Wi-Max aims to make wireless Internet access universal without tying the user to a specific location or “hotspot.” The rollout of Wi-Max in the U.S., which began in 2009, uses lower frequencies at high power densities than currently used by cellular phone transmission. Many in science and the activist communities are worried, especially those concerned about electromagnetic-hypersensitivity syndrome (EHS).

It remains to be seen what additional exposures “smart grid” or “smart meter” technology proposals to upgrade the electrical powerline transmission systems will entail regarding total ambient RFR increases, but it will add another ubiquitous low-level layer. Some of the largest corporations on earth, notably Siemens and General Electric, are involved. Smart grids are being built out in some areas of the U.S. and in Canada and throughout Europe. That technology plans to alter certain aspects of powerline utility metering from a wired system to a partially wireless one. The systems require a combination of wireless transmitters attached to

homes and businesses that will send radio signals of approximately 1 W output in the 2.4000–2.4835 GHz range to local “access point” transceivers, which will then relay the signal to a further distant information center (Tell 2008). Access point antennas will require additional power density and will be capable of interfacing with frequencies between 900 MHz and 1.9 GHz. Most signals will be intermittent, operating between 2 to 33 seconds per hour. Access points will be mounted on utility poles as well as on free-standing towers. The systems will form wide area networks (WANs), capable of covering whole towns and counties through a combination of “mesh-like” networks from house to house. Some meters installed on private homes will also act as transmission relays, boosting signals from more distant buildings in a neighborhood. Eventually, WANs will be completely linked.

Smart grid technology also proposes to allow homeowners to attach additional RFR devices to existing indoor appliances, to track power use, with the intention of reducing usage during peak hours. Manufacturers like General Electric are already making appliances with transmitters embedded in them. Many new appliances will be incapable of having transmitters deactivated without disabling the appliance and the warranty. People will be able to access their home appliances remotely by cell phone. The WANs smart grids described earlier in the text differ significantly from the current upgrades that many utility companies have initiated within recent years that already use low-power RFR meters attached to homes and businesses. Those first generation RFR meters transmit to a mobile van that travels through an area and “collects” the information on a regular billing cycle. Smart grids do away with the van and the meter reader and work off of a centralized RFR antenna system capable of blanketing whole regions with RFR.

Another new technology in the wings is broadband over powerlines (BPL). It was approved by the U.S. FCC in 2007 and some systems have already been built out. Critics of the latter technology warned during the approval process that radiofrequency interference could occur in homes and businesses and those warnings have proven accurate. BPL technology couples radiofrequency bands with extremely low frequency (ELF) bands that travel over powerline infrastructure, thereby creating a multi-frequency field designed to extend some distance from the lines themselves. Such couplings follow the path of conductive material, including secondary distribution lines, into people’s homes.

There is no doubt that wireless technologies are popular with consumers and businesses alike, but all of this requires an extensive infrastructure to function. Infrastructure typically consists of freestanding towers (either preexisting towers to which cell antennas can be mounted, or new towers specifically built for cellular service), and myriad methods of placing transceiving antennas near the service being called for by users. This includes attaching antenna panels to the sides of buildings as well as roof-mountings; antennas hidden inside church steeples, barn silos, elevator shafts, and any number of other “stealth sites.” It also includes camouflaging towers to look like trees indigenous to areas where they are placed, e.g., pine trees in northern climates, cacti

⁷ CTIA website: <http://www.ctia.org/advocay/research/index.cfm/AID/10385>. (Accessed 9 December 2008.)

in deserts, and palm trees in temperate zones, or as chimneys, flagpoles, silos, or other tall structures (Rinebold 2001). Often the rationale for stealth antenna placement or camouflaging of towers is based on the aesthetic concerns of host communities.

An aesthetic emphasis is often the only perceived control of a municipality, particularly in countries like America where there is an overriding federal preemption that precludes taking the “environmental effects” of RFR into consideration in cell tower siting as stipulated in Section 704 of *The Telecommunications Act of 1996* (USFCC 1996). Citizen resistance, however, is most often based on health concerns regarding the safety of RFR exposures to those who live near the infrastructure. Many citizens, especially those who claim to be hypersensitive to electromagnetic fields, state they would rather know where the antennas are and that hiding them greatly complicates society’s ability to monitor for safety.⁸

Industry representatives try to reassure communities that facilities are many orders of magnitude below what is allowed for exposure by standards-setting boards and studies bear that out (Cooper et al. 2006; Henderson and Bangay 2006; Bornkessel et al. 2007). These include standards by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) used throughout Europe, Canada, and elsewhere (ICNIRP 1998). The standards currently adopted by the U.S. FCC, which uses a two-tiered system of recommendations put out by the National Council on Radiation Protection (NCRP) for civilian exposures (referred to as uncontrolled environments), and the International Electricians and Electronics Engineers (IEEE) for professional exposures (referred to as controlled environments) (U.S. FCC 1997). The U.S. may eventually adopt standards closer to ICNIRP. The current U.S. standards are more protective than ICNIRP’s in some frequency ranges so any harmonization toward the ICNIRP standards will make the U.S. limits more lenient.

All of the standards currently in place are based on RFRs ability to heat tissue, called thermal effects. A longstanding criticism, going back to the 1950s (Levitt 1995), is that such acute heating effects do not take potentially more subtle non-thermal effects into consideration. And based on the number of citizens who have tried to stop cell towers from being installed in their neighborhoods, laypeople in many countries do not find adherence to existing standards valid in addressing health concerns. Therefore, infrastructure siting does not have the confidence of the public (Levitt 1998).

2. A changing industry

Cellular phone technology has changed significantly over the last two decades. The first wireless systems began in the mid-1980s and used analog signals in the 850–900 MHz range. Because those wavelengths were longer, infrastructure was needed on average every 8 to 10 miles apart. Then came the digital personal communications systems (PCS) in the late 1990s, which used higher frequencies, around 1900 GHz, and digitized signals. The PCS systems, using shorter wavelengths and with more stringent exposure guide-

lines, require infrastructure approximately every 1 to 3 miles apart. Digital signals work on a binary method, mimicking a wave that allows any frequency to be split in several ways, thereby carrying more information far beyond just voice messages.

Today’s 3G network can send photos and download music and video directly onto a cell phone screen or iPod. The new 4G systems digitize and recycle some of the older frequencies in the 700 to 875 MHz bands to create another service for wireless Internet access. The 4G network does not require a customer who wants to log on wirelessly to locate a “hot spot” as is the case with private Wi-Fi systems. Today’s Wi-Fi uses a network of small antennas, creating coverage of a small area of 100 ft (~30 m) or so at homes or businesses. Wi-fi can also create a small wireless computer system in a school where they are often called wireless local area networks (WLANs). Whole cities can make Wi-Fi available by mounting antennas to utility poles.

Large-scale Wi-Fi systems have come under increasing opposition from citizens concerned about health issues who have legally blocked such installations (Antenna Free Union⁹). Small-scale Wi-Fi has also come under more scrutiny as governments in France and throughout Europe have banned such installations in libraries and schools, based on precautionary principles (REFLEX Program 2004).

3. Cell towers in perspective: some definitions

Cell towers are considered low-power installations when compared to many other commercial uses of radiofrequency energy. Wireless transmission for radio, television (TV), satellite communications, police and military radar, federal homeland security systems, emergency response networks, and many other applications all emit RFR, sometimes at millions of watts of effective radiated power (ERP). Cellular facilities, by contrast, use a few hundred watts of ERP per channel, depending on the use being called for at any given time and the number of service providers co-located at any given tower.

No matter what the use, once emitted, RFR travels through space at the speed of light and oscillates during propagation. The number of times the wave oscillates in one second determines its frequency.

Radiofrequency radiation covers a large segment of the electromagnetic spectrum and falls within the nonionizing bands. Its frequency ranges between 10 kHz to 300 GHz; 1 Hz = 1 oscillation per second; 1 kHz = 1000 Hz; 1 MHz = 1 000 000 Hz; and 1 GHz = 1 000 000 000 Hz.

Different frequencies of RFR are used in different applications. Some examples include the frequency range of 540 to 1600 kHz used in AM radio transmission; and 76 to 108 MHz used for FM radio. Cell-phone technology uses frequencies between 800 MHz and 3 GHz. The RFR of 2450 MHz is used in some Wi-Fi applications and microwave cooking.

Any signal can be digitized. All of the new telecommunications technologies are digitized and in the U.S., all TV is

⁸ See, for example, www.radiationresearch.org. (Accessed October 2010.)

⁹ <http://www.antennafreeunion.org/>. (Accessed October 2010.)

broadcast in 100% digital formats — digital television (DTV) and high definition television (HDTV). The old analog TV signals, primarily in the 700 MHz ranges, will now be recycled and relicensed for other applications to additional users, creating additional layers of ambient exposures.

The intensity of RFR is generally measured and noted in scientific literature in watts per square meter (W/m^2); milliwatts per square centimetre (mW/cm^2), or microwatts per square centimetre ($\mu\text{W/cm}^2$). All are energy relationships that exist in space. However, biological effects depend on how much of the energy is absorbed in the body of a living organism, not just what exists in space.

4. Specific absorption rate (SAR)

Absorption of RFR depends on many factors including the transmission frequency and the power density, one's distance from the radiating source, and one's orientation toward the radiation of the system. Other factors include the size, shape, mineral and water content of an organism. Children absorb energy differently than adults because of differences in their anatomies and tissue composition. Children are not just "little adults". For this reason, and because their bodies are still developing, children may be more susceptible to damage from cell phone radiation. For instance, radiation from a cell phone penetrates deeper into the head of children (Gandhi et al. 1996; Wiart et al. 2008) and certain tissues of a child's head, e.g., the bone marrow and the eye, absorb significantly more energy than those in an adult head (Christ et al. 2010). The same can be presumed for proximity to towers, even though exposure will be lower from towers under most circumstances than from cell phones. This is because of the distance from the source. The transmitter is placed directly against the head during cell phone use whereas proximity to a cell tower will be an ambient exposure at a distance.

There is little difference between cell phones and the domestic cordless phones used today. Both use similar frequencies and involve a transmitter placed against the head. But the newer digitally enhanced cordless technology (DECT) cordless domestic phones transmit a constant signal even when the phone is not in use, unlike the older domestic cordless phones. But some DECT brands are available that stop transmission if the mobile units are placed in their docking station.

The term used to describe the absorption of RFR in the body is specific absorption rate (SAR), which is the rate of energy that is actually absorbed by a unit of tissue. Specific absorption rates (SARs) are generally expressed in watts per kilogram (W/kg) of tissue. The SAR measurements are averaged either over the whole body, or over a small volume of tissue, typically between 1 and 10 g of tissue. The SAR is used to quantify energy absorption to fields typically between 100 kHz and 10 GHz and encompasses RFR from devices such as cellular phones up through diagnostic MRI (magnetic resonance imaging).

Specific absorption rates are a more reliable determinant and index of RFR's biological effects than are power density, or the intensity of the field in space, because SARs reflect what is actually being absorbed rather than the energy in space. However, while SARs may be a more precise

model, at least in theory, there were only a handful of animal studies that were used to determine the threshold values of SAR for the setting of human exposure guidelines (de Lorge and Ezell 1980; de Lorge 1984). (For further information see Section 8). Those values are still reflected in today's standards.

It is presumed that by controlling the field strength from the transmitting source that SARs will automatically be controlled too, but this may not be true in all cases, especially with far-field exposures such as near cell or broadcast towers. Actual measurement of SARs is very difficult in real life so measurements of electric and magnetic fields are used as surrogates because they are easier to assess. In fact, it is impossible to conduct SAR measurements in living organisms so all values are inferred from dead animal measurements (thermography, calorimetry, etc.), phantom models, or computer simulation (FDTD).

However, according to the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) *Health Effects of Exposure to EMF*, released in January of 2009:

... recent studies of whole body plane wave exposure of both adult and children phantoms demonstrated that when children and small persons are exposed to levels which are in compliance with reference levels, exceeding the basic restrictions cannot be excluded [Dimbylow and Bloch 2007; Wang et al. 2006; Kuhn et al., 2007; Hadjem et al., 2007]. While the whole frequency range has been investigated, such effects were found in the frequency bands around 100 MHz and also around 2 GHz. For a model of a 5-year-old child it has been shown that when the phantom is exposed to electromagnetic fields at reference levels, the basic restrictions were exceeded by 40% [Conil et al., 2008]. ... Moreover, a few studies demonstrated that multipath exposure can lead to higher exposure levels compared to plane wave exposure [Neubauer et al. 2006; Vermeeren et al. 2007]. It is important to realize that this issue refers to far field exposure only, for which the actual exposure levels are orders of magnitude below existing guidelines. (p. 34–35, SCENIHR 2009)

In addition to average SARs, there are indications that biological effects may also depend on how energy is actually deposited in the body. Different propagation characteristics such as modulation, or different wave-forms and shapes, may have different effects on living systems. For example, the same amount of energy can be delivered to tissue continuously or in short pulses. Different biological effects may result depending on the type and duration of the exposure.

5. Transmission facilities

The intensity of RFR decreases rapidly with the distance from the emitting source; therefore, exposure to RFR from transmission towers is often of low intensity depending on one's proximity. But intensity is not the only factor. Living near a facility will involve long-duration exposures, sometimes for years, at many hours per day. People working at home or the infirm can experience low-level 24 h exposures. Nighttimes alone will create 8 h continuous exposures. The current standards for both ICNIRP, IEEE and the NCRP (adopted by the U.S. FCC) are for whole-body exposures

averaged over a short duration (minutes) and are based on results from short-term exposure studies, not for long-term, low-level exposures such as those experienced by people living or working near transmitting facilities. For such populations, these can be involuntary exposures, unlike cell phones where user choice is involved.

There have been some recent attempts to quantify human SARs in proximity to cell towers but these are primarily for occupational exposures in close proximity to the sources and questions raised were dosimetry-based regarding the accuracy of antenna modeling (van Wyk et al. 2005). In one study by Martínez-Búrdalo et al. (2005) however, the researchers used high-resolution human body models placed at different distances to assess SARs in worst-case exposures to three different frequencies — 900, 1800, and 2170 MHz. Their focus was to compute whole-body averaged SARs at a maximum 10 g averaged SAR inside the exposed model. They concluded that for

... antenna-body distances in the near zone of the antenna, the fact that averaged field values are below reference levels, could, at certain frequencies, not guarantee guidelines compliance based on basic restrictions.

(p. 4125, Martínez-Búrdalo et al. 2005)

This raises questions about the basic validity of predicting SARs in real-life exposure situations or compliance to guidelines according to standard modeling methods, at least when one is very close to an antenna.

Thus, the relevant questions for the general population living or working near transmitting facilities are: Do biological and (or) health effects occur after exposure to low-intensity RFR? Do effects accumulate over time, since the exposure is of a long duration and may be intermittent? What precisely is the definition of low-intensity RFR? What might its biological effects be and what does the science tell us about such exposures?

6. Government radiofrequency radiation (RFR) guidelines: how spatial energy translates to the body's absorption

The U.S. FCC has issued guidelines for both power density and SARs. For power density, the U.S. guidelines are between 0.2–1.0 mW/cm². For cell phones, SAR levels require hand-held devices to be at or below 1.6 W/kg measured over 1.0 g of tissue. For whole body exposures, the limit is 0.08 W/kg.

In most European countries, the SAR limit for hand-held devices is 2.0 W/kg averaged over 10 g of tissue. Whole body exposure limits are 0.08 W/kg.

At 100–200 ft (~30–60 m) from a cell phone base station, a person can be exposed to a power density of 0.001 mW/cm² (i.e., 1.0 µW/cm²). The SAR at such a distance can be 0.001 W/kg (i.e., 1.0 mW/kg). The U.S. guidelines for SARs are between 0.08–0.40 W/kg.

For the purposes of this paper, we will define low-intensity exposure to RFR of power density of 0.001 mW/cm² or a SAR of 0.001 W/kg.

7. Biological effects at low intensities

Many biological effects have been documented at very low intensities comparable to what the population experiences within 200 to 500 ft (~60–150 m) of a cell tower, including effects that occurred in studies of cell cultures and animals after exposures to low-intensity RFR. Effects reported include: genetic, growth, and reproductive; increases in permeability of the blood–brain barrier; behavioral; molecular, cellular, and metabolic; and increases in cancer risk. Some examples are as follows:

- Dutta et al. (1989) reported an increase in calcium efflux in human neuroblastoma cells after exposure to RFR at 0.005 W/kg. Calcium is an important component in normal cellular functions.
- Fesenko et al. (1999) reported a change in immunological functions in mice after exposure to RFR at a power density of 0.001 mW/cm².
- Magras and Xenos (1997) reported a decrease in reproductive function in mice exposed to RFR at power densities of 0.000168–0.001053 mW/cm².
- Forgacs et al. (2006) reported an increase in serum testosterone levels in rats exposed to GSM (global system for mobile communication)-like RFR at SAR of 0.018–0.025 W/kg.
- Persson et al. (1997) reported an increase in the permeability of the blood–brain barrier in mice exposed to RFR at 0.0004–0.008 W/kg. The blood–brain barrier is a physiological mechanism that protects the brain from toxic substances, bacteria, and viruses.
- Phillips et al. (1998) reported DNA damage in cells exposed to RFR at SAR of 0.0024–0.024 W/kg.
- Kesari and Behari (2009) also reported an increase in DNA strand breaks in brain cells of rats after exposure to RFR at SAR of 0.0008 W/kg.
- Belyaev et al. (2009) reported changes in DNA repair mechanisms after RFR exposure at a SAR of 0.0037 W/kg. A list of publications reporting biological and (or) health effects of low-intensity RFR exposure is in Table 1.

Out of the 56 papers in the list, 37 provided the SAR of exposure. The average SAR of these studies at which biological effects occurred is 0.022 W/kg — a finding below the current standards.

Ten years ago, there were only about a dozen studies reporting such low-intensity effects; currently, there are more than 60. This body of work cannot be ignored. These are important findings with implications for anyone living or working near a transmitting facility. However, again, most of the studies in the list are on short-term (minutes to hours) exposure to low-intensity RFR. Long-term exposure studies are sparse. In addition, we do not know if all of these reported effects occur in humans exposed to low-intensity RFR, or whether the reported effects are health hazards. Biological effects do not automatically mean adverse health effects, plus many biological effects are reversible. However, it is clear that low-intensity RFR is not biologically inert. Clearly, more needs to be learned before a presumption of safety can continue to be made regarding placement of antenna arrays near the population, as is the case today.

Table 1. List of studies reporting biological effects at low intensities of radiofrequency radiation (RFR).

Reference	Frequency	Form of RFR	Exposure duration	SAR (W/kg)	Power density ($\mu\text{W}/\text{cm}^2$)	Effects reported
Balmori (2010) (in vivo) (eggs and tadpoles of frog)	88.5–1873.6 MHz	Cell phone base station emission	2 months		3.25	Retarded development
Belyaev et al. (2005) (in vitro)	915 MHz	GSM	24, 48 h	0.037		Genetic changes in human white blood cells
Belyaev et al. (2009) (in vitro)	915 MHz, 1947 MHz	GSM, UMTS	24, 72 h	0.037		DNA repair mechanism in human white blood cells
Blackman et al. (1980) (in vitro)	50 MHz	AM at 16 Hz		0.0014		Calcium in forebrain of chickens
Boscol et al. (2001) (in vivo) (human whole body)	500 KHz–3 GHz	TV broadcast			0.5	Immunological system in women
Campisi et al. (2010) (in vitro)	900 MHz	CW (CW– no effect observed)	14 days, 5, 10, 20 min per day		26	DNA damage in human glial cells
Capri et al. (2004) (in vitro)	900 MHz	AM at 50 Hz GSM	1 h/day, 3 days	0.07		A slight decrease in cell proliferation when human immune cells were stimulated with mitogen and a slight increase in the number of cells with altered distribution of phosphatidylserine across the membrane
Chiang et al. (1989) (in vivo) (human whole body)	Lived and worked close to AM radio and radar installations for more than 1 year				10	People lived and worked near AM radio antennas and radar installations showed deficits in psychological and short-term memory tests
de Pomerai et al. (2003) (in vitro)	1 GHz		24, 48 h	0.015		Protein damages
D’Inzeo et al. (1988) (in vitro)	10.75 GHz	CW	30–120 s	0.008		Operation of acetylcholine-related ion-channels in cells. These channels play important roles in physiological and behavioral functions
Dutta et al. (1984) (in vitro)	915 MHz	Sinusoidal AM at 16 Hz	30 min	0.05		Increase in calcium efflux in brain cancer cells
Dutta et al. (1989) (in vitro)	147 MHz	Sinusoidal AM at 16 Hz	30 min	0.005		Increase in calcium efflux in brain cancer cells
Fesenko et al. (1999) (in vivo) (mouse- wavelength in mm range)	From 8.15–18 GHz		5 h to 7 days direction of response depended on exposure duration		1	Change in immunological functions
Forgacs et al. (2006) (in vivo) (mouse whole body)	1800 MHz	GSM, 217 Hz pulses, 576 μs pulse width	2 h/day, 10 days	0.018		Increase in serum testosterone
Guler et al. (2010) (In vivo) (rabbit whole body)	1800 MHz	AM at 217 Hz	15 min/day, 7 days		52	Oxidative lipid and DNA damages in the brain of pregnant rabbits

Table 1 (*continued*).

Reference	Frequency	Form of RFR	Exposure duration	SAR (W/kg)	Power density ($\mu\text{W}/\text{cm}^2$)	Effects reported
Hjollund et al. (1997) (in vivo) (human partial or whole body)	Military radars				10	Sperm counts of Danish military personnel, who operated mobile ground-to-air missile units that use several RFR emitting radar systems, were significantly lower compared to references
Ivaschuk et al. (1997) (in vitro)	836.55 MHz	TDMA	20 min	0.026		A gene related to cancer
Jech et al. (2001) (in vivo) (human partial body exposure-narcoleptic patients)	900 MHz	GSM— 217 Hz pulses, 577 μs pulse width	45 min	0.06		Improved cognitive functions
Kesari and Behari (2009) (in vivo) (rat whole body)	50 GHz		2 h/day, 45 days	0.0008		Double strand DNA breaks observed in brain cells
Kesari and Behari (2010) (in vivo) (rat whole body)	50 GHz		2 h/day, 45 days	0.0008		Reproductive system of male rats
Kesari et al. (2010) (in vivo) (rat whole body)	2450 MHz	50 Hz modulation	2 h/day, 35 days	0.11		DNA double strand breaks in brain cells
Kwee et al. (2001) (in vitro)	960 MHz	GSM	20 min	0.0021		Increased stress protein in human epithelial amnion cells
Lebedeva et al. (2000) (in vivo) (human partial body)	902.4 MHz	GSM	20 min		60	Brain wave activation
Lerchl et al. (2008) (in vivo) (hamster whole body)	383 MHz	TETRA	24 h/day, 60 days	0.08		Metabolic changes
Magras and Xenos (1997) (in vivo) (mouse whole body)	900 and 1800 MHz “Antenna park”	GSM	Exposure over several generations		0.168	Decrease in reproductive function
Mann et al. (1998) (in vivo) (human whole body)	900 MHz	GSM pulse-modulated at 217 Hz, 577 μs width	8 h		20	A transient increase in blood cortisol
Marinelli et al. (2004) (in vitro)	900 MHz	CW	2–48 h	0.0035		Cell’s self-defense responses triggered by DNA damage
Markovà et al. (2005) (in vitro)	915 and 905 MHz	GSM	1 h	0.037		Chromatin conformation in human white blood cells
Navakatikian and Tomashevskaya (1994) (in vivo) (rat whole body)	2450 MHz	CW (no effect observed)	Single (0.5–12hr) or repeated (15–60 days, 7–12 h/day) exposure, CW—no effect	0.0027		Behavioral and endocrine changes, and decreases in blood concentrations of testosterone and insulin
	3000 MHz	Pulse-modulated 2 μs pulses at 400 Hz				
Nittby et al. (2008) (in vivo) (rat whole body)	900 MHz,	GSM	2 h/week, 55 weeks	0.0006		Reduced memory functions
Novoselova et al. (1999) (in vivo) (mouse whole body – wavelength in mm range)	From 8.15–18 GHz		1 s sweep time – 16 ms reverse, 5 h		1	Functions of the immune system
Novoselova et al. (2004) (in vivo) (mouse whole body – wavelength in mm range)	From 8.15–18 GHz		1 s sweep time 16 ms reverse, 1.5 h/day, 30 days		1	Decreased tumor growth rate and enhanced survival

Table 1 (*continued*).

Reference	Frequency	Form of RFR	Exposure duration	SAR (W/kg)	Power density ($\mu\text{W}/\text{cm}^2$)	Effects reported
Panagopoulos et al. (2010) (in vivo) (fly whole body)	900 and 1800 MHz	GSM	6 min/day, 5 days		1–10	Reproductive capacity and induced cell death
Panagopoulos and Margaritis (2010a) (in vivo) (fly whole body)	900 and 1800 MHz	GSM	6 min/day, 5 days		10	‘Window’ effect of GSM radiation on reproductive capacity and cell death
Panagopoulos and Margaritis (2010b) (in vivo) (fly whole body)	900 and 1800 MHz	GSM	1–21 min/day, 5 days		10	Reproductive capacity of the fly decreased linearly with increased duration of exposure
Pavicic and Trosic (2008) (in vitro)	864 and 935 MHz	CW	1–3 h	0.08		Growth affected in Chinese hamster V79 cells
Pérez-Castejón et al. (2009) (in vitro)	9.6 GHz	90% AM	24 h	0.0004		Increased proliferation rate in human astrocytoma cancer cells
Persson et al. (1997) (in vivo) (mouse whole body)	915 MHz	CW and pulse-modulated (217 Hz, 0.57 ms; 50 Hz, 6.6 ms)	2–960 min; CW more potent	0.0004		Increase in permeability of the blood–brain barrier
Phillips et al. (1998) (in vitro)	813.5625 MHz 836.55 MHz	iDEN TDMA	2, 21 h 2, 21 h	0.0024		DNA damage in human leukemia cells
Pologea-Moraru et al. (2002) (in vitro)	2.45 GHz		1 h		15	Change in membrane of cells in the retina
Pyrpasopoulou et al. (2004) (in vivo) (rat whole body)	9.4 GHz	GSM (50 Hz pulses, 20 μs pulse length)	1–7 days postcoitum	0.0005		Exposure during early gestation affected kidney development
Roux et al. (2008a) (in vivo) (tomato whole body)	900 MHz				7	Gene expression and energy metabolism
Roux et al. (2008b) (in vivo) (plant whole body)	900 MHz				7	Energy metabolism
Salford et al. (2003) (in vivo) (rat whole body)	915 MHz	GSM	2 h	0.02		Nerve cell damage in brain
Sarimov et al. (2004) (in vitro)	895–915 MHz	GSM	30 min	0.0054		Human lymphocyte chromatin affected similar to stress response
Schwartz et al. (1990) (in vitro)	240 MHz	CW and sinusoidal modulation at 0.5 and 16 Hz, effect only observed at 16 Hz modulation	30 min	0.00015		Calcium movement in the heart
Schwarz et al. (2008) (in vitro)	1950 MHz	UMTS	24 h	0.05		Genes in human fibroblasts
Somosy et al. (1991) (in vitro)	2.45 GHz	CW and 16 Hz square-modulation, modulated field more potent than CW		0.024		Molecular and structural changes in cells of mouse embryos

Table 1 (concluded).

Reference	Frequency	Form of RFR	Exposure duration	SAR (W/kg)	Power density ($\mu\text{W}/\text{cm}^2$)	Effects reported
Stagg et al. (1997) (in vitro)	836.55 MHz	TDMA duty cycle 33%	24 h	0.0059		Glioma cells showed significant increases in thymidine incorporation, which may be an indication of an increase in cell division
Stankiewicz et al. (2006) (in vitro)	900 MHz	GSM 217 Hz pulses, 577 ms width		0.024		Immune activities of human white blood cells
Tattersall et al. (2001) (in vitro)	700 MHz	CW	5–15 min	0.0016		Function of the hippocampus
Velizarov et al. (1999) (in vitro)	960 MHz	GSM 217 Hz square-pulse, duty cycle 12%	30 min	0.000021		Decrease in proliferation of human epithelial amnion cells
Veyret et al. (1991) (in vivo) (mouse whole body)	9.4 GHz	1 μs pulses at 1000 pps, also with or without sinusoidal AM between 14 and 41 MHz, response only with AM, direction of response depended on AM frequency		0.015		Functions of the immune system
Vian et al. (2006) (in vivo) plant	900 MHz				7	Stress gene expression
Wolke et al. (1996) (in vitro)	900, 1300, 1800 MHz	Square-wave modulated at 217 Hz		0.001		Calcium concentration in heart muscle cells of guinea pig
Yurekli et al. (2006) (in vivo) (rat whole body)	945 MHz	CW, 16 Hz, 50 Hz, and 30 KHz modulations GSM, 217 Hz pulse-modulation	7 h/day, 8 days	0.0113		Free radical chemistry

Note: These papers gave either specific absorption rate, SAR, (W/kg) or power density ($\mu\text{W}/\text{cm}^2$) of exposure. (Studies that did not contain these values were excluded). AM, amplitude-modulated or amplitude-modulation; CW, continuous wave; GSM, global system for mobile communication; iDEN, integrated digital enhanced network; TDMA, time division multiple access, TETRA, terrestrial trunked radio; UMTS, universal mobile telecommunications system.

8. Long-term exposures and cumulative effects

There are many important gaps in the RFR research. The majority of the studies on RFR have been conducted with short-term exposures, i.e., a few minutes to several hours. Little is known about the effects of long-term exposure such as would be experienced by people living near telecommunications installations, especially with exposures spanning months or years. The important questions then are: What are the effects of long-term exposure? Does long-term exposure produce different effects from short-term exposure? Do effects accumulate over time?

There is some evidence of cumulative effects. Phillips et al. (1998) reported DNA damage in cells after 24 h exposure to low-intensity RFR. DNA damage can lead to gene mutation that accumulates over time. Magras and Xenos (1997) reported that mice exposed to low-intensity RFR became less reproductive. After five generations of exposure the mice were not able to produce offspring. This shows that the effects of RFR can pass from one generation to another. Persson et al. (1997) reported an increase in permeability of the blood-brain barrier in mice when the energy deposited in the body exceeded 1.5 J/kg (joule per kilogram) — a measurement of the total amount of energy deposited. This suggests that a short-term, high-intensity exposure can produce the same effect as a long-term, low-intensity exposure, and is another indication that RFR effects can accumulate over time.

In addition, there is some indication that test animals become more sensitive to radiation after long-term exposure as seen in two of the critical experiments that contributed to the present SAR standards, called the “behavior-disruption experiments” carried out in the 1980s.

In the first experiment, de Lorge and Ezell (1980) trained rats on an auditory observing-response task. In the task, an animal was presented with two bars. Pressing the right bar would produce either a low-pitch or a high-pitch tone for half a second. The low-pitch tone signaled an unrewarded situation and the animal was expected to do nothing. However, when the high-pitch tone was on, pressing the left bar would produce a food reward. Thus, the task required continuous vigilance in which an animal had to coordinate its motor responses according to the stimulus presented to get a reward by choosing between a high-pitch or low-pitch tone. After learning the task, rats were then irradiated with 1280 MHz or 5620 MHz RFR during performance. Disruption of behavior (i.e., the rats could not perform very well) was observed within 30–60 min of exposure at a SAR of 3.75 W/kg for 1280 MHz, and 4.9 W/kg for 5620 MHz.

In another experiment, de Lorge (1984) trained monkeys on a similar auditory observing response task. Monkeys were exposed to RFR at 225, 1300, and 5800 MHz. Disruption of performance was observed at 8.1 mW/cm² (SAR 3.2 W/kg) for 225 MHz; at 57 mW/cm² (SAR 7.4 W/kg) for 1300 MHz; and at 140 mW/cm² (SAR 4.3 W/kg) for 5800 MHz. The disruption occurred when body temperature was increased by 1°C.

The conclusion from these experiments was that “... disruption of behavior occurred when an animal was exposed at an SAR of approximately 4 W/kg, and disruption

occurred after 30–60 minutes of exposure and when body temperature increased by 1°C” (de Lorge 1984). Based on just these two experiments, 4 W/kg has been used in the setting of the present RFR exposure guidelines for humans. With theoretical safety margins added, the limit for occupational exposure was then set at 0.4 W/kg (i.e., 1/10 of the SAR where effects were observed) and for public exposure 0.08 W/kg for whole body exposures (i.e., 1/5 of that of occupational exposure).

But the relevant question for establishing a human SAR remains: Is this standard adequate, based on so little data, primarily extrapolated from a handful of animal studies from the same investigators? The de Lorge (1984) animal studies noted previously describe effects of short-term exposures, defined as less than one hour. But are they comparable to long-term exposures like what whole populations experience when living or working near transmitting facilities?

Two series of experiments were conducted in 1986 on the effects of long-term exposure. D’Andrea et al. (1986a) exposed rats to 2450 MHz RFR for 7 h a day, 7 days per week for 14 weeks. They reported a disruption of behavior at an SAR of 0.7 W/kg. And D’Andrea et al. (1986b) also exposed rats to 2450 MHz RFR for 7 h a day, 7 days per week, for 90 days at an SAR of 0.14 W/kg and found a small but significant disruption in behavior. The experimenters concluded, “... the threshold for behavioral and physiological effects of chronic (long-term) RFR exposure in the rat occurs between 0.5 mW/cm² (0.14 W/kg) and 2.5 mW/cm² (0.7 W/kg)” (p. 55, D’Andrea et al. 1986b).

The previously mentioned studies show that RFR can produce effects at much lower intensities after test animals are repeatedly exposed. This may have implications for people exposed to RFR from transmission towers for long periods of time.

Other biological outcomes have also been reported after long-term exposure to RFR. Effects were observed by Baranski (1972) and Takashima et al. (1979) after prolonged, repeated exposure but not after short-term exposure. Conversely, in other work by Johnson et al. (1983), and Lai et al. (1987, 1992) effects that were observed after short-term exposure disappeared after prolonged, repeated exposure, i.e., habituation occurred. Different effects were observed by Dumansky and Shandala (1974) and Lai et al. (1989) after different exposure durations. The conclusion from this body of work is that effects of long-term exposure can be quite different from those of short-term exposure.

Since most studies with RFR are short-term exposure studies, it is not valid to use their results to set guidelines for long-term exposures, such as in populations living or working near cell phone base stations.

9. Effects below 4 W/kg: thermal versus nonthermal

As described previously, current international RFR exposure standards are based mainly on the acute exposure experiments that showed disruption of behavior at 4 W/kg. However, such a basis is not scientifically valid. There are many studies that show biological effects at SARs less than 4 W/kg after short-term exposures to RFR. For example, since the 4 W/kg originated from psychological and (or) be-

havioral experiments, when one surveys the EMF literature on behavioral effects, one can find many reports on behavioral effects observed at SARs less than 4 W/kg, e.g., D'Andrea et al. (1986a) at 0.14 to 0.7 W/kg; DeWitt et al. (1987) at 0.14 W/kg; Gage (1979) at 3 W/kg; King et al. (1971) at 2.4 W/kg; Kumlin et al. (2007) at 3 W/kg; Lai et al. (1989) at 0.6 W/kg; Mitchell et al. (1977) at 2.3 W/kg (1977); Navakatikian and Tomashevskaya (1994) at 0.027 W/kg; Nittby et al. (2008) at 0.06 W/kg; Schrot et al. (1980) at 0.7 W/kg; Thomas et al. (1975) at 1.5 to 2.7 W/kg; and Wang and Lai (2000) at 1.2 W/kg.

The obvious mechanism of effects of RFR is thermal (i.e., tissue heating). However, for decades, there have been questions about whether nonthermal (i.e., not dependent on a change in temperature) effects exist. This is a well-discussed area in the scientific literature and not the focus of this paper but we would like to mention it briefly because it has implications for public safety near transmission facilities.

Practically, we do not actually need to know whether RFR effects are thermal or nonthermal to set exposure guidelines. Most of the biological-effects studies of RFR that have been conducted since the 1980s were under non-thermal conditions. In studies using isolated cells, the ambient temperature during exposure was generally well controlled. In most animal studies, the RFR intensity used usually did not cause a significant increase in body temperature in the test animals. Most scientists consider nonthermal effects as established, even though the implications are not fully understood.

Scientifically, there are three rationales for the existence of nonthermal effects:

1. Effects can occur at low intensities when a significant increase in temperature is not likely.
2. Heating does not produce the same effects as RFR exposure.
3. RFR with different modulations and characteristics produce different effects even though they may produce the same pattern of SAR distribution and tissue heating.

Low-intensity effects have been discussed previously (see Section 7.). There are reports that RFR triggers effects that are different from an increase in temperature, e.g., Wachtel et al. (1975); Seaman and Wachtel (1978); D'Inzeo et al. (1988). And studies showing that RFR of the same frequency and intensity, but with different modulations and waveforms, can produce different effects as seen in the work of Baranski (1972); Arber and Lin (1985); Campisi et al. (2010); d'Ambrosio et al. (2002); Frey et al. (1975); Oscar and Hawkins (1977); Sanders et al. (1985); Huber et al. (2002); Markkanen et al. (2004); Hung et al. (2007); and Luukkonen et al. (2009).

A counter-argument for point 1 is that RFR can cause micro-heating at a small location even though there is no measurement change in temperature over the whole sample. This implies that an effect observed at low intensities could be due to localized micro-heating, and, therefore, is still considered thermal. However, the micro-heating theory could not apply to test subjects that are not stationary, such as in the case of Magras and Xenos (1997) who reported that mice exposed to low-intensity RFR became less repro-

ductive over several generations. "Hot spots" of heating move within the body when the subject moves in the field and, thus, cannot maintain sustained heating of certain tissue.

The counter argument for point 2 is that heating by other means does not produce the same pattern of energy distribution as RFR. Thus, different effects would result. Again, this counter argument does not work on moving objects. Thus, results supporting the third point are the most compelling.

10. Studies on exposure to cell tower transmissions

From the early genesis of cell phone technology in the early 1980s, cell towers were presumed safe when located near populated areas because they are low-power installations in comparison with broadcast towers. This thinking already depended on the assumption that broadcast towers were safe if kept below certain limits. Therefore, the reasoning went, cell towers would be safer still. The thinking also assumed that exposures between cell and broadcast towers were comparable. In certain cities, cell and broadcast tower transmissions both contributed significantly to the ambient levels of RFR (Sirav and Seyhan 2009; Joseph et al. 2010).

There are several fallacies in this thinking, including the fact that broadcast exposures have been found unsafe even at regulated thresholds. Adverse effects have been noted for significant increases for all cancers in both men and women living near broadcast towers (Henderson and Anderson 1986); childhood leukemia clusters (Maskarinec et al. 1994; Ha et al. 2003; Park et al. 2004); adult leukemia and lymphoma clusters, and elevated rates of mental illness (Hocking et al. 1996; Micheloizzi et al. 2002; Ha et al. 2007); elevated brain tumor incidence (Dolk et al. 1997a, 1997b); sleep disorders, decreased concentration, anxiety, elevated blood pressure, headaches, memory impairment, increased white cell counts, and decreased lung function in children (Altpeter et al. 2000); motor, memory, and learning impairment in children (Kolodynski and Kolodynski 1996), nonlinear increases in brain tumor incidence (Colorado Department of Public Health 2004); increases in malignant melanoma (Hallberg and Johansson 2002); and nonlinear immune system changes in women (Boscol et al. 2001). (The term "nonlinear" is used in scientific literature to mean that an effect was not directly proportional to the intensity of exposure. In the case of the two studies mentioned previously, adverse effects were found at significant distances from the towers, not in closer proximity where the power density exposures were higher and therefore presumed to have a greater chance of causing effects. This is something that often comes up in low-level energy studies and adds credence to the argument that low-level exposures could cause qualitatively different effects than higher level exposures.)

There is also anecdotal evidence in Europe that some communities have experienced adverse physical reactions after the switch from analog TV broadcast signals to the new digital formats, which can be more biologically complex.

Three doctors in Germany, Cornelia Waldmann-Selsam, MD, Christine Aschermann, MD, and Markus Kern, MD,

wrote (in a letter to the U.S. President, entitled *Warning — Adverse Health Effects From Digital Broadcast Television*)¹⁰, that on 20 May 2006, two digital broadcast television stations went on the air in the Hessian Rhoe area. Prior to that time that area had low radiation levels, which included that from cell phone towers of which there were few. However, coinciding with the introduction of the digital signals, within a radius of more than 20 km, there was an abrupt onset of symptoms for constant headaches, pressure in the head, drowsiness, sleep problems, inability to think clearly, forgetfulness, nervousness, irritability, tightness in the chest, rapid heartbeat, shortness of breath, depression, apathy, loss of empathy, burning skin, sense of inner burning, leg weakness, pain in the limbs, stabbing pain in various organs, and weight gain. They also noted that birds fled the area. The same symptoms gradually appeared in other locations after digital signals were introduced. Some physicians accompanied affected people to areas where there was no TV reception from terrestrial sources, such as in valleys or behind mountain ranges, and observed that many people became symptom free after only a short time. The digital systems also require more transmitters than the older analog systems and, therefore, somewhat higher exposure levels to the general population are expected, according to the 2009 SCENIHR Report (SCENIHR 2009).

Whether digital or analog, the frequencies differ between broadcast and cell antennas and do not couple with the human anatomy in whole-body or organ-specific models in the same ways (NCRP 1986; ICNIRP 1998). This difference in how the body absorbs energy is the reason that all standards-setting organizations have the strictest limitations between 30–300 MHz — ranges that encompass FM broadcast where whole body resonance occurs (Cleveland 2001). Exposure allowances are more lenient for cell technology in frequency ranges between 300 MHz and 3 GHz, which encompass cellular phone technology. This is based on the assumption that the cell frequencies do not penetrate the body as deeply and no whole-body resonance can occur.

There are some studies on the health effects on people living near cell phone towers. Though cell technology has been in existence since the late 1980s, the first study of populations near cell tower base stations was only conducted by Santini et al. (2002). It was prompted in part by complaints of adverse effects experienced by residents living near cell base stations throughout the world and increased activism by citizens. As well, increasing concerns by physicians to understand those complaints was reflected in professional organizations like the ICEMS (International Committee on Electromagnetic Safety) Catania Resolution¹¹, the Irish Doctors Environmental Association (IDEA)¹², and the Freiburger Appeal¹³.

Santini conducted a survey study of 530 people (270 men, 260 women) on 18 nonspecific health symptoms (NSHS) in relation to self-reported distance from towers of <10 m, 10 to 50 m, 50 to 100 m, 100 to 200 m, 200 to 300 m, and >300 m. The control group compared people living more

than 300 m (approximately 1000 ft) or not exposed to base stations. They controlled for age, presence of electrical transformers (<10 m), high tension lines (<100 m), and radio/TV broadcast transmitters (<4 km), the frequency of cell phone use (>20 min per day), and computer use (>2 h per day). Questions also included residents' location in relation to antennas, taking into account orientations that were facing, beside, behind, or beneath antennas in cases of roof-mounted antenna arrays. Exposure conditions were defined by the length of time living in the neighborhood (<1 year through >5 years); the number of days per week and hours per day (<1 h to >16 h) that were spent in the residence.

Results indicated increased symptoms and complaints the closer a person lived to a tower. At <10 m, symptoms included nausea, loss of appetite, visual disruptions, and difficulty in moving. Significant differences were observed up through 100 m for irritability, depressive tendencies, concentration difficulties, memory loss, dizziness, and lower libido. Between 100 and 200 m, symptoms included headaches, sleep disruption, feelings of discomfort, and skin problems. Beyond 200 m, fatigue was significantly reported more often than in controls. Women significantly reported symptoms more often than men, except for libido loss. There was no increase in premature menopause in women in relation to distance from towers. The authors concluded that there were different sex-dependent sensitivities to electromagnetic fields. They also called for infrastructure not to be sited <300 m (~1000 ft) from populations for precautionary purposes, and noted that the information their survey captured might not apply to all circumstances since actual exposures depend on the volume of calls being generated from any particular tower, as well as on how radiowaves are reflected by environmental factors.

Similar results were found in Egypt by Abdel-Rassoul et al. (2007) looking to identify neurobehavioral deficits in people living near cell phone base stations. Researchers conducted a cross-sectional study of 85 subjects: 37 living inside a building where antennas were mounted on the rooftop and 48 agricultural directorate employees who worked in a building (~10 m) opposite the station. A control group of 80 who did not live near base stations were matched for age, sex, occupation, smoking, cell phone use, and educational level. All participants completed a questionnaire containing personal, educational, and medical histories; general and neurological examinations; a neurobehavioral test battery (NBTB) involving tests for visuomotor speed, problem solving, attention, and memory, in addition to a Eysenck personality questionnaire (EPQ).

Their results found a prevalence of neuropsychiatric complaints: headaches, memory changes, dizziness, tremors, depressive symptoms, and sleep disturbance were significantly higher among exposed inhabitants than controls. The NBTB indicated that the exposed inhabitants exhibited a significantly lower performance than controls in one of the tests of attention and short-term auditory memory (paced auditory

¹⁰ <http://www.notanotherconspiracy.com/2009/02/warning-adverse-health-effects-from.html>. (Accessed October 2010.)

¹¹ <http://www.icems.eu/resolution.htm>

¹² <http://www.ideeaireland.org/emr.htm>

¹³ http://www.laleva.cc/environment/freiburger_appeal.html

serial addition test (PASAT)). Also, the inhabitants opposite the station exhibited a lower performance in the problem-solving test (block design) than those who lived under the station. All inhabitants exhibited a better performance in the two tests of visuomotor speed (digit symbol and Trailmaking B) and one test of attention (Trailmaking A) than controls.

Environmental power-density data were taken from measurements of that building done by the National Telecommunications Institute in 2000. Measurements were collected from the rooftop where the antennas were positioned, the shelter that enclosed the electrical equipment and cables for the antennas, other sites on the roof, and within an apartment below one of the antennas. Power-density measurements ranged from 0.1–6.7 $\mu\text{W}/\text{cm}^2$. No measurements were taken in the building across the street. The researchers noted that the last available measurements of RFR in 2002 in that area were less than the allowable standards but also noted that exposures depended on the number of calls being made at any given time, and that the number of cell phone users had increased approximately four times within the 2 years just before the beginning of their study in 2003. They concluded that inhabitants living near mobile phone base stations are at risk for developing neuropsychiatric problems, as well as some changes in the performance of neuro-behavioral functions, either by facilitation (over-stimulation) or inhibition (suppression). They recommended the standards be revised for public exposure to RFR, and called for using the NBTB for regular assessment and early detection of biological effects among inhabitants near base stations (Abdel-Rassoul et al. 2007).

Hutter et al. (2006) sought to determine cognitive changes, sleep quality, and overall well-being in 365 rural and urban inhabitants who had lived for more than a year near 10 selected cell phone base stations. Distance from antennas was 24 to 600 m in rural areas, and 20 to 250 m in the urban areas. Field strength measurements were taken in bedrooms and cognitive tests were performed. Exposure to high-frequency EMFs was lower than guidelines and ranged from 0.000002 to 0.14 $\mu\text{W}/\text{cm}^2$ for all frequencies between 80 MHz and 2 GHz with the greater exposure coming from mobile telecommunications facilities, which was between 0.000001 and 0.14 $\mu\text{W}/\text{cm}^2$. Maximum levels were between 0.000002 and 0.41 $\mu\text{W}/\text{cm}^2$ with an overall 5% of the estimated maximum above 0.1 $\mu\text{W}/\text{cm}^2$. Average levels were slightly higher in rural areas (0.005 $\mu\text{W}/\text{cm}^2$) than in urban areas (0.002 $\mu\text{W}/\text{cm}^2$). The researchers tried to ascertain if the subjective rating of negative health consequences from base stations acted as a covariable but found that most subjects expressed no strong concerns about adverse effects from the stations, with 65% and 61% in urban and rural areas, respectively, stating no concerns at all. But symptoms were generally higher for subjects who expressed health concerns regarding the towers. The researchers speculated that this was due to the subjects with health complaints seeking answers and consequently blaming the base station; or that subjects with concerns were more anxious in general and tended to give more negative appraisals of their body

functions; and the fact that some people simply give very negative answers.

Hutter's results were similar to those of Santini et al. (2002) and Abdel-Rassoul et al. (2007). Hutter found a significant relationship between symptoms and power densities. Adverse effects were highest for headaches, cold hands and feet, cardiovascular symptoms, and concentration difficulties. Perceptual speed increased while accuracy decreased insignificantly with increasing exposure levels. Unlike the others, however, Hutter found no significant effects on sleep quality and attributed such problems more to fear of adverse effects than actual exposure. They concluded that effects on well-being and performance cannot be ruled out even as mechanisms of action remain unknown. They further recommended that antenna siting should be done to minimize exposure to the population.

Navarro et al. (2003) measured the broadband electric field (E-field) in the bedrooms of 97 participants in La Nora, Murcia, Spain and found a significantly higher symptom score in 9 out of 16 symptoms in the groups with an exposure of 0.65 V/m (0.1121 $\mu\text{W}/\text{cm}^2$) compared with the control group with an exposure below 0.2 V/m (0.01061 $\mu\text{W}/\text{cm}^2$), both as an average. The highest contributor to the exposure was GSM 900/1800 MHz signals from mobile telecommunications. The same researchers also reported significant correlation coefficients between the measured E-field and 14 out of 16 health-related symptoms with the five highest associations found for depressive tendencies, fatigue, sleeping disorders, concentration difficulties, and cardiovascular problems. In a follow up work, Oberfeld et al. (2004) conducted a health survey in Spain in the vicinity of two GSM 900/1800 MHz cell phone base stations, measuring the E-field in six bedrooms, and found similar results. They concluded that the symptoms are in line with "microwave syndrome" reported in the literature (Johnson-Liakouris 1998). They recommended that the sum total for ambient exposures should not be higher than 0.02 V/m — the equivalent of a power density of 0.00011 $\mu\text{W}/\text{cm}^2$, which is the indoor exposure value for GSM base stations proposed by the Public Health Office of the Government of Salzburg, Austria in 2002¹⁴.

Eger et al. (2004) took up a challenge to medical professionals by Germany's radiation protection board to determine if there was an increased cancer incidence in populations living near cell towers. Their study evaluated data for approximately 1000 patients between the years of 1994 and 2004 who lived close to cell antennas. The results showed that the incidence of cancer was significantly higher among those patients who had lived for 5 to 10 years at a distance of up to 400 m from a cell installation that had been in operation since 1993, compared with those patients living further away, and that the patients fell ill on an average of 8 years earlier than would be expected. In the years between 1999 and 2004, after 5 years operation of the transmitting installation, the relative risk of getting cancer had tripled for residents in proximity of the installation compared with inhabitants outside of the area.

Wolf and Wolf (2004) investigated increased cancer incidence in populations living in a small area in Israel exposed

¹⁴ <http://www.salzburg.gv.at/umweltmedizin>. (Accessed October 2010.)

to RFR from a cell tower. The antennas were mounted 10 m high, transmitting at 850 MHz and 1500 W at full-power output. People lived within a 350 m half circle of the antennas. An epidemiologic assessment was done to determine whether the incidence of cancer cases among individuals exposed to the base station in the south section of the city of Netanya called Irus (designated area A) differed from expected cancer rates throughout Israel, and in the town of Netanya in general, as compared with people who lived in a nearby area without a cell tower (designated area B). There were 622 participants in area A who had lived near the cell tower for 3 to 7 years and were patients at one health clinic. The exposure began 1 year before the start of the study when the station first came into service. A second cohort of individuals in area B, with 1222 participants who received medical services at a different clinic located nearby, was used as a control. Area B was closely matched for environment, workplace, and occupational characteristics. In exposure area A, eight cases of different types of cancer were diagnosed in a period of 1 year, including cancers of the ovary (1), breast (3), Hodgkins lymphoma (1), lung (1), osteoid osteoma (1), and hypernephroma (1). The RFR field measurements were also taken per house and matched to the cancer incidents. The rate of cancers in area A was compared with the annual rate of the general population (31 cases per 10 000) and to incidence for the entire town of Netanya. There were two cancers in area B, compared to eight in area A. They also examined the history of the exposed cohort (area A) for malignancies in the 5 years before exposure began and found only two cases in comparison to eight cases 1 year after the tower went into service. The researchers concluded that relative cancer rates for females were 10.5 for area A, 0.6 for area B, and 1.0 for the whole town of Netanya. Cancer incidence in women in area A was thus significantly higher ($p < 0.0001$) compared with that of area B and the whole city. A comparison of the relative risk revealed that there were 4.15 times more cases in area A than in the entire population. The study indicated an association between increased incidence of cancer and living in proximity to a cell phone base station. The measured level of RFR, between 0.3 to 0.5 $\mu\text{W}/\text{cm}^2$, was far below the thermal guidelines.

11. Risk perception, electrohypersensitivity, and psychological factors

Others have followed up on what role risk perception might play in populations near cell base stations to see if it is associated with health complaints.

Blettner et al. (2008) conducted a cross-sectional, multi-phase study in Germany. In the initial phase, 30 047 people out of a total of 51 444, who took part in a nationwide survey, were also asked about their health and attitudes towards mobile phone base stations. A list of 38 potential health complaints were used. With a response rate of 58.6%, 18.0% were concerned about adverse health effects from base stations, 10.3% directly attributed personal adverse effects to them. It was found that people living within 500 m, or those concerned about personal exposures, reported more health complaints than others. The authors concluded that even though a substantial proportion of the German popula-

tion is concerned about such exposures, the observed higher health complaints cannot be attributed to those concerns alone.

Kristiansen et al. (2009) also explored the prevalence and nature of concerns about mobile phone radiation, especially since the introduction of new 3G-UMTS (universal mobile telecommunications system) networks that require many more towers and antennas have sparked debate throughout Europe. Some local governments have prohibited mobile antennas on public buildings due to concerns about cancer, especially brain cancer in children and impaired psychomotor functions. One aim of the researchers was risk assessment — to compare people's perceptions of risk from cell phones and masts to other fears, such as being struck by lightning. In Denmark, they used data from a 2006 telephone survey of 1004 people aged 15+ years. They found that 28% of the respondents were concerned about exposure to mobile phone radiation and 15% about radiation from masts. In contrast, 82% of respondents were concerned about other forms of environmental pollution. Nearly half of the respondents considered the mortality risk of 3G phones and masts to be of the same order of magnitude as being struck by lightning (0.1 fatalities per million people per year), while 7% thought it was equivalent to tobacco-induced lung cancer (approximately 500 fatalities per million per year). Among women, concerns about mobile phone radiation, perceived mobile phone mortality risk, and concerns about unknown consequences of new technologies, increased with educational levels. More than two thirds of the respondents felt that they had not received adequate public information about the 3G system. The results of the study indicated that the majority of the survey population had little concern about mobile phone radiation, while a minority is very concerned.

Augner et al. (2009) examined the effects of short-term GSM base station exposure on psychological symptoms including good mood, alertness, and calmness as measured by a standardized well-being questionnaire. Fifty-seven participants were randomly assigned to one of three different exposure scenarios. Each of those scenarios subjected participants to five 50 min exposure sessions, with only the first four relevant for the study of psychological symptoms. Three exposure levels were created by shielding devices, which could be installed or removed between sessions to create double-blinded conditions. The overall median power densities were 0.00052 $\mu\text{W}/\text{cm}^2$ during low exposures, 0.0154 $\mu\text{W}/\text{cm}^2$ during medium exposures, and 0.2127 $\mu\text{W}/\text{cm}^2$ during high-exposure sessions. Participants in high- and medium-exposure scenarios were significantly calmer during those sessions than participants in low-exposure scenarios throughout. However, no significant differences between exposure scenarios in the "good mood" or "alertness" factors were found. The researchers concluded that short-term exposure to GSM base station signals may have an impact on well-being by reducing psychological arousal.

Eltiti et al. (2007) looked into exposures to the GSM and UMTS exposures from base stations and the effects to 56 participants who were self-reported as sensitive to electromagnetic fields. Some call it electro-hypersensitivity (EHS) or just electrosensitivity. People with EHS report that they suffer negative health effects when exposed to electro-

magnetic fields from everyday objects such as cell phones, mobile phone base stations, and many other common things in modern societies. EHS is a recognized functional impairment in Sweden. This study used both open provocation and double-blind tests to determine if electrosensitive and control individuals experienced more negative health effects when exposed to base-station-like signals compared with sham exposures. Fifty-six electrosensitive and 120 control participants were tested first in an open provocation test. Of these, 12 electrosensitive and six controls withdrew after the first session. Some of the electrosensitive subjects later issued a statement saying that the initial exposures made them too uncomfortable to continue participating in the study. This means that the study may have lost its most vulnerable test subjects right at the beginning, possibly skewing later outcomes. The remainder completed a series of double-blind tests. Subjective measures of well-being and symptoms, as well as physiological measures of blood-volume pulse, heart rate, and skin conductance were obtained. They found that during the open provocation, electrosensitive individuals reported lower levels of well-being to both GSM and UMTS signals compared with sham exposure, whereas controls reported more symptoms during the UMTS exposure. During double-blind tests the GSM signal did not have any effect on either group. Electrosensitive participants did report elevated levels of arousal during the UMTS condition, but the number or severity of symptoms experienced did not increase. Physiological measures did not differ across the three exposure conditions for either group. The researchers concluded that short-term exposure to a typical GSM base-station-like signal did not affect well-being or physiological functions in electrosensitive or control individuals even though the electrosensitive individuals reported elevated levels of arousal when exposed to a UMTS signal. The researchers stated that this difference was likely due to the effect of the order of the exposures throughout the series rather than to the exposure itself. The researchers do not speculate about possible data bias when one quarter of the most sensitive test subjects dropped out at the beginning.

In follow-up work, Eltiti et al. (2009) attempted to clarify some of the inconsistencies in the research with people who report sensitivity to electromagnetic fields. Such individuals, they noted, often report cognitive impairments that they believe are due to exposure to mobile phone technology. They further said that previous research in this area has revealed mixed results, with the majority of research only testing control individuals. Their aim was to clarify whether short-term (50 min) exposure at $1 \mu\text{W}/\text{cm}^2$ to typical GSM and UMTS base station signals affects attention, memory, and physiological endpoints in electrosensitive and control participants. Data from 44 electrosensitive and 44 matched-control participants who performed the digit symbol substitution task (DSST), digit span task (DS), and a mental arithmetic task (MA), while being exposed to GSM, UMTS, and sham signals under double-blind conditions were analyzed. Overall, the researchers concluded that cognitive functioning was not affected by short-term exposure to either GSM or UMTS signals. Nor did exposure affect the physiological measurements of blood-volume pulse, heart rate, and skin conductance that were taken while participants performed the cognitive tasks. The GSM signal was a combined signal of

900 and 1800 MHz frequencies, each with a power flux density of $0.5 \mu\text{W}/\text{cm}^2$, which resulted in combined power flux density of $1 \mu\text{W}/\text{cm}^2$ over the area where test subjects were seated. Previous measurements in 2002 by the National Radiological Protection Board in the UK, measuring power density from base stations at 17 sites and 118 locations (Mann et al. 2002), found that in general, the power flux density was between $0.001 \mu\text{W}/\text{cm}^2$ to $0.1 \mu\text{W}/\text{cm}^2$, with the highest power density being $0.83 \mu\text{W}/\text{cm}^2$. The higher exposure used by the researchers in this study was deemed comparable by them to the maximum exposure a person would encounter in the real world. But many electrosensitive individuals report that they react to much lower exposures too. Overall, the electrosensitive participants had a significantly higher level of mean skin conductance than control subjects while performing cognitive tasks. The researchers noted that this was consistent with other studies that hypothesize sensitive individuals may have a general imbalance in autonomic nervous system regulation. Generally, cognitive functioning was not affected in either electrosensitives or controls. When Bonferroni corrections were applied to the data, the effects on mean skin conductance disappeared. A criticism is that this averaging of test results hides more subtle effects.

Wallace et al. (2010) also tried to determine if short-term exposure to RFR had an impact on well-being and what role, if any, psychological factors play. Their study focused on "Airwave", a new communication system being rolled out across the UK for police and emergency services. Some police officers have complained about skin rashes, nausea, headaches, and depression as a consequence of using Airwave two-way radio handsets. The researchers used a small group of self-reported electrosensitive people to determine if they reacted to the exposures, and to determine if exposures to specific signals affect a selection of the adult population who do not report sensitivity to electromagnetic fields. A randomized double-blind provocation study was conducted to establish whether short-term exposure to a terrestrial trunked radio (TETRA) base station signal has an impact on health and well-being in individuals with electrosensitivity and controls. Fifty-one individuals with electrosensitivity and 132 age- and gender-matched controls participated first in an open provocation test, while 48 electrosensitive and 132 control participants went on to complete double-blind tests in a fully screened semi-anechoic chamber. Heart rate, skin conductance, and blood pressure readings provided objective indices of short-term physiological response. Visual analogue scales and symptom scales provided subjective indices of well-being. Their results found no differences on any measure between TETRA and sham (no signal) under double-blind conditions for either control or electrosensitive participants and neither group could detect the presence of a TETRA signal above chance (50%). The researchers noted, however, that when conditions were not double-blinded, the electrosensitive individuals did report feeling worse and experienced more severe symptoms during TETRA compared with sham exposure. They concluded that the adverse symptoms experienced by electrosensitive individuals are caused by the belief of harm from TETRA base stations rather than because of the low-level EMF exposure itself.

It is interesting to note that the three previously men-

tioned studies were all conducted at the same Electromagnetics and Health Laboratory at the University of Essex, Essex, UK, by the same relative group of investigators. Those claiming to be electrosensitive are a small subgroup in the population, often in touch through Internet support groups. In the first test, many electrosensitives dropped out because they found the exposures used in the study too uncomfortable. The drop-out rate decreased with the subsequent studies, which raises the question of whether the electrosensitive participants in the latter studies were truly electrosensitive. There is a possibility that a true subgroup of electrosensitives cannot tolerate such study conditions, or that potential test subjects are networking in a way that preclude their participation in the first place. In fact, researchers were not able to recruit their target numbers for electrosensitive participants in any of the studies. The researchers also do not state if there were any of the same electrosensitive participants used in the three studies. Nor do they offer comment regarding the order of the test methods possibly skewing results.

Because of uncertainty regarding whether EMF exposures are actually causing the symptoms that electrosensitives report, and since many electrosensitives also report sensitivities to myriad chemicals and other environmental factors, it has been recommended (Hansson Mild et al. 2006) that a new term be used to describe such individuals — idiopathic environmental intolerance with attribution to electromagnetic fields (IEI-EMF).

Furubayashi et al. (2009) also tried to determine if people who reported symptoms to mobile phones are more susceptible than control subjects to the effect of EMF emitted from base stations. They conducted a double-blind, cross-over provocation study, sent questionnaires to 5000 women and obtained 2472 valid responses from possible candidates. From those, they were only able to recruit 11 subjects with mobile phone related symptoms (MPRS) and 43 controls. The assumption was that individuals with MPRS matched the description of electrosensitivity by the World Health Organization (WHO). There were four EMF exposure conditions, each of which lasted 30 min: (i) continuous, (ii) intermittent, (iii) sham exposure with noise, and (iv) sham exposure without noise. Subjects were exposed to EMF of 2.14 GHz, 10 V/m ($26.53 \mu\text{W}/\text{cm}^2$) wideband code division multiple access (W-CDMA), in a shielded room to simulate whole-body exposure to EMF from base stations, although the exposure strength they used was higher than that commonly received from base stations. The researchers measured several psychological and cognitive parameters immediately before and after exposure, and monitored autonomic functions. Subjects were asked to report on their perception of EMF and level of discomfort during the experiment. The MPRS group did not differ from the controls in their ability to detect exposure to EMF. They did, however, consistently experience more discomfort in general, regardless of whether or not they were actually exposed to EMF, and despite the lack of significant changes in their autonomic functions. The researchers noted that others had found electrosensitive subjects to be more susceptible to stress imposed by task performance, although they did not differ from normal controls in their personality traits. The researchers concluded that the two groups did not differ in

their responses to real or sham EMF exposure according to any psychological, cognitive or autonomic assessment. They said they found no evidence of any causal link between hypersensitivity symptoms and exposure to EMF from base stations. However, this study, had few MPRS participants.

Regel et al. (2006) also investigated the effects of the influence of UMTS base-station-like signals on well-being and cognitive performance in subjects with and without self-reported sensitivity to RFR. The researchers performed a controlled exposure experiment in a randomized, double-blind crossover study, with 45 min at an electric field strength of 0 V/m, 1.0 V/m ($0.2653 \mu\text{W}/\text{cm}^2$), or 10.0 V/m ($26.53 \mu\text{W}/\text{cm}^2$), incident with a polarization of 45° from the left-rear side of the subject, at weekly intervals. A total of 117 healthy subjects that included 33 self-reported sensitive subjects and 84 nonsensitive subjects, participated in the study. The team assessed well-being, perceived field strength, and cognitive performance with questionnaires and cognitive tasks and conducted statistical analyses using linear mixed models. Organ-specific and brain-tissue-specific dosimetry, including uncertainty and variation analysis, was performed. Their results found that in both groups, well-being and perceived field strength were not associated with actual exposure levels. They observed no consistent condition-induced changes in cognitive performance except for two marginal effects. At 10 V/m ($26.53 \mu\text{W}/\text{cm}^2$) they observed a slight effect on speed in one of six tasks in the sensitive subjects and an effect on accuracy in another task in nonsensitive subjects. Both effects disappeared after multiple endpoint adjustments. They concluded that they could not confirm a short-term effect of UMTS base-station-like exposure on well-being. The reported effects on brain functioning were marginal, which they attributed to chance. Peak spatial absorption in brain tissue was considerably smaller than during use of a mobile phone. They concluded that no conclusions could be drawn regarding short-term effects of cell phone exposure or the effects of long-term base-station-like exposures on human health.

Siegrist et al. (2005) investigated risk perceptions associated with mobile phones, base stations, and other sources of EMFs through a telephone survey conducted in Switzerland. Participants assessed both risks and benefits associated with nine different sources of EMF. Trust in the authorities regulating these hazards was also assessed. Participants answered a set of questions related to attitudes toward EMF and toward mobile phone base stations. Their results were: high-voltage transmission lines are perceived as the most risky source of EMF; and mobile phones and base stations received lower risk ratings. Trust in authorities was positively associated with perceived benefits and negatively associated with perceived risks. Also, people who use their mobile phones frequently perceived lower risks and higher benefits than people who use their mobile phones infrequently. People who believed they lived close to a base station did not significantly differ in their perceived level of risks associated with mobile phone base stations from people who did not believe they lived close to a base station. A majority of participants favored limits to exposures based on worst-case scenarios. The researchers also correlated perceived risks with other beliefs and found that belief in paranormal phenomena is related to level of perceived risks associated with

EMF. In addition, people who believed that most chemical substances cause cancer also worried more about EMF than people who did not believe that chemical substances are harmful. This study found the obvious — that some people worry more about environmental factors than others across a range of concerns.

Wilen et al. (2006) investigated the effects of exposure to mobile phone RFR on people who experience subjective symptoms when using mobile phones. Twenty subjects with MPFS were matched with 20 controls without MPFS. Each subject participated in two experimental sessions, one with true exposure and one with sham exposure, in random order. In the true exposure condition, the test subjects were exposed for 30 min to an RFR field generating a maximum SAR (1 g) in the head of 1 W/kg through an indoor base station antenna attached to signals from a 900 MHz GSM mobile phone. Physiological and cognitive parameters were measured during the experiment for heart rate and heart rate variability (HRV), respiration, local blood flow, electrodermal activity, critical flicker fusion threshold (CFFT), short-term memory, and reaction time. No significant differences related to RFR exposure conditions and no differences in baseline data were found between subject groups with the exception for reaction time, which was significantly longer among the test subjects than among the controls the first time the test was performed. This difference disappeared when the test was repeated. However, the test subjects differed significantly from the controls with respect to HRV as measured in the frequency domain. The test subjects displayed a shift in the low/high frequency ratio towards a sympathetic dominance in the autonomous nervous system during the CFFT and memory tests, regardless of exposure condition. They interpreted this as a sign of differences in the autonomous nervous system regulation among persons with MPFS and persons with no such symptoms.

12. Assessing exposures

Quantifying, qualifying, and measuring radiofrequency (RF) energy both indoors and outdoors has frustrated scientists, researchers, regulators, and citizens alike. The questions involve how best to capture actual exposure data — through epidemiology, computer estimates, self-reporting, or actual dosimetry measurements. Determining how best to do this is more important than ever, given the increasing background levels of RFR. Distance from a generating source has traditionally been used as a surrogate for probable power density but that is imperfect at best, given how RF energy behaves once it is transmitted. Complicated factors and numerous variables come into play. The wearing of personal dosimetry devices appears to be a promising area for capturing cumulative exposure data.

Neubauer et al. (2007) asked the question if epidemiology studies are even possible now, given the increasing deployment of wireless technologies. They examined the methodological challenges and used experts in engineering, dosimetry, and epidemiology to critically evaluate dosimetric concepts and specific aspects of exposure assessment regarding epidemiological study outcomes. They concluded that, at least in theory, epidemiology studies near base stations are feasible but that all relevant RF sources have to be

taken into account. They called for pilot studies to validate exposure assessments and recommended that short-to-medium term effects on health and well-being are best investigated by cohort studies. They also said that for long-term effects, groups with high exposures need to be identified first, and that for immediate effects, human laboratory studies are the preferred approach. In other words, multiple approaches are required. They did not make specific recommendations on how to quantify long-term, low-level effects on health and well-being.

Radon et al. (2006) compared personal RF dosimetry measurements against recall to ascertain the reliability of self-reporting near base stations. Their aim was to test the feasibility and reliability of personal dosimetry devices. They used a 24 h assessment on 42 children, 57 adolescents, and 64 adults who wore a Maschek dosimeter prototype, then compared the self-reported exposures with the measurements. They also compared the readings of Maschek prototype with those of the Antennessa DSP-090 in 40 test subjects. They found that self-reported exposures did not correlate with actual readings. The two dosimeters were in moderate agreement. Their conclusion was that personal dosimetry, or the wearing of measuring devices, was a feasible method in epidemiology studies.

A study by Frei et al. (2009) also used personal dosimetry devices to examine the total exposure levels of RFR in the Swiss urban population. What they found was startling — nearly a third of the test subjects' cumulative exposures were from cell base stations. Prior to this study, exposure from base stations was thought to be insignificant due to their low-power densities and to affect only those living or working in close proximity to the infrastructure. This study showed that the general population moves in and out of these particular fields with more regularity than previously expected. In a sample of 166 volunteers from Basel, Switzerland, who agreed to wear personal exposure meters (called exposimeters), the researchers found that nearly one third of total exposures came from base stations. Participants carried an exposimeter for 1 week (2 separate weeks in 32 participants) and also completed an activity diary. Mean values were calculated using the robust regression on order statistics (ROS) method. Results found a mean weekly exposure to all RFR and (or) EMF sources was $0.013 \mu\text{W}/\text{cm}^2$ (range of individual means $0.0014\text{--}0.0881 \mu\text{W}/\text{cm}^2$). Exposure was mainly from mobile phone base stations (32.0%), mobile phone handsets (29.1%), and digital enhanced cordless telecommunications (DECT) phones (22.7%). People owning a DECT phone (total mean $0.015 \mu\text{W}/\text{cm}^2$) or mobile phone ($0.014 \mu\text{W}/\text{cm}^2$) were exposed more than those not owning a DECT or mobile phone ($0.010 \mu\text{W}/\text{cm}^2$). Mean values were highest in trains ($0.116 \mu\text{W}/\text{cm}^2$), airports ($0.074 \mu\text{W}/\text{cm}^2$), and tramways or buses ($0.036 \mu\text{W}/\text{cm}^2$) and were higher during daytime ($0.016 \mu\text{W}/\text{cm}^2$) than nighttime ($0.008 \mu\text{W}/\text{cm}^2$). The Spearman correlation coefficient between mean exposure in the first and second week was 0.61. Another surprising finding of this study contradicted Neubauer et al. (2008) who found that a rough dosimetric estimate of a 24 h exposure from a base station ($1\text{--}2 \text{ V/m}$) (i.e., $0.2653\text{--}1.061 \mu\text{W}/\text{cm}^2$) corresponded to approximately 30 min of mobile phone use. But Frei et al. (2009) found, using the exposimeter, that cell phone use was 200 times higher than the average base sta-

tion exposure contribution in self-selected volunteers (0.487 versus 0.002 $\mu\text{W}/\text{cm}^2$). This implied that at the belt, backpack, or in close vicinity to the body, the mean base station contribution corresponds to about 7 min of mobile phone use (24 h divided by 200), not 30 min. They concluded that exposure to RFR varied considerably between persons and locations but was fairly consistent for individuals. They noted that cell phones, base stations, and cordless phones were important sources of exposure in urban Switzerland but that people could reduce their exposures by replacing their cordless domestic phones with conventional landlines at home. They determined that it was feasible to combine diary data with personal exposure measurements and that such data was useful in evaluating RFR exposure during daily living, as well as helpful in reducing exposure misclassification in future epidemiology studies.

Viel et al. (2009) also used personal exposure meters (EME SPY 120 made by Satimo and ESM 140 made by Maschek) to characterize actual residential exposure from antennas. Their primary aim was to assess personal exposures, not ambient field strengths. Two hundred randomly selected people were enrolled to wear measurement meters for 24 h and asked to keep a time–location–activity diary. Two exposure metrics for each radiofrequency were then calculated: the proportion of measurements above the detection limit of 0.05 V/m (0.0006631 $\mu\text{W}/\text{cm}^2$) and the maximum electric field strength. Residential addresses were geocoded and distances from each antenna were calculated. They found that much of the time-recorded field strength was below the detection level of 0.05 V/m, with the exception of the FM radio bands, which had a detection threshold of 12.3%. The maximum electric field was always lower than 1.5 V/m (0.5968 $\mu\text{W}/\text{cm}^2$). Exposure to GSM and digital cellular system (DCS) frequencies peaked around 280 m in urban areas and 1000 m from antennas in more suburban/rural areas. A downward trend in exposures was found within a 10 km distance for FM exposures. Conversely, UMTS, TV3, and TV 4 and 5 signals did not vary with distance. The difference in peak exposures for cell frequencies were attributed to microcell antennas being more numerous in urban areas, often mounted a few meters above ground level, whereas macrocell base stations in less urban areas are placed higher (between 15 and 50 m above ground level) to cover distances of several kilometres. They concluded that despite the limiting factors and high variability of RF exposure assessments, in using sound statistical technique they were able to determine that exposures from GSM and DCS cellular base stations actually increase with distance in the near source zone, with a maximum exposure where the main beam intersects the ground. They noted that such information should be available to local authorities and the public regarding the siting of base stations. Their findings coincide with Abdel-Rassoul et al. (2007) who found field strengths to be less in the building directly underneath antennas, with reported health complaints higher in inhabitants of the building across the street.

Amoako et al. (2009) conducted a survey of RFR at public access points close to schools, hospitals, and highly populated areas in Ghana near 50 cell phone base stations. Their primary objective was to measure and analyze field strength levels. Measurements were made using an Anritsu

model MS 2601A spectrum analyzer to determine the electric field level in the 900 and 1800 MHz frequency bands. Using a GPS (global positioning system), various base stations were mapped. Measurements were taken at 1.5 m above ground to maintain line of sight with the RF source. Signals were measured during the day over a 3 h period, at a distance of approximately 300 m. The results indicated that power densities for 900 MHz at public access points varied from as low as 0.000001 $\mu\text{W}/\text{cm}^2$ to as high as 0.001 $\mu\text{W}/\text{cm}^2$. At 1800 MHz, the variation of power densities was from 0.000001 to 0.01 $\mu\text{W}/\text{cm}^2$. There are no specific RFR standards in Ghana. These researchers determined that while their results in most cities were compliant with the ICNIRP standards, levels were still 20 times higher than values typically found in the UK, Australia, and the U.S., especially for Ghana base stations in rural areas with higher power output. They determined that there is a need to reduce RFR levels since an increase in mobile phone usage is foreseen.

Clearly, predicting actual exposures based on simple distance from antennas using standardized computer formulas is inadequate. Although power density undoubtedly decreases with distance from a generating source, actual exposure metrics can be far more complex, especially in urban areas. Contributing to the complexity is the fact that the narrow vertical spread of the beam creates a low RF field strength at the ground directly below the antenna. As a person moves away or within a particular field, exposures can become complicated, creating peaks and valleys in field strength. Scattering and attenuation alter field strength in relation to building placement and architecture, and local perturbation factors can come into play. Power density levels can be 1 to 100 times lower inside a building, depending on construction materials, and exposures can differ greatly within a building, depending on numerous factors such as orientation toward the generating source and the presence of conductive materials. Exposures can be twice as high in upper floors than in lower floors, as found by Anglesio et al. (2001).

However, although distance from a transmitting source has been shown to be an unreliable determinant for accurate exposure predictions, it is nevertheless useful in some general ways. For instance, it has been shown that radiation levels from a tower with 15 nonbroadcast radio systems will fall off to hypothetical natural background levels at approximately 1500 ft (~ 500 m) (Rinebold 2001). This would be in general agreement with the lessening of symptoms in people living near cell towers at a distance over 1000 ft (~ 300 m) found by Santini et al. (2002).

The previously mentioned studies indicate that accuracy in both test design and personal dosimetry measurements are possible in spite of the complexities and that a general safer distance from a cell tower for residences, schools, day-care centers, hospitals, and nursing homes might be ascertained.

13. Discussion

Numerous biological effects do occur after short-term exposures to low-intensity RFR but potential hazardous health effects from such exposures on humans are still not well es-

tablished, despite increasing evidence as demonstrated throughout this paper. Unfortunately, not enough is known about biological effects from long-term exposures, especially as the effects of long-term exposure can be quite different from those of short-term exposure. It is the long-term, low-intensity exposures that are most common today and increasing significantly from myriad wireless products and services.

People are reporting symptoms near cell towers and in proximity to other RFR-generating sources including consumer products such as wireless computer routers and Wi-Fi systems that appear to be classic “microwave sickness syndrome,” also known as “radiofrequency radiation sickness.” First identified in the 1950s by Soviet medical researchers, symptoms included headache, fatigue, ocular dysfunction, dizziness, and sleep disorders. In Soviet medicine, clinical manifestations include dermatographism, tumors, blood changes, reproductive and cardiovascular abnormalities, depression, irritability, and memory impairment, among others. The Soviet researchers noted that the syndrome is reversible in early stages but is considered lethal over time (Tolgskaya et al. 1973).

Johnson-Liakouris (1998) noted there are both occupational studies conducted between 1953 and 1991 and clinical cases of acute exposure between 1975 and 1993 that offer substantive verification for the syndrome. Yet, U.S. regulatory agencies and standards-setting groups continue to quibble about the existence of microwave sickness because it does not fit neatly into engineering models for power density, even as studies are finding that cell towers are creating the same health complaints in the population. It should be noted that before cellular telecommunications technology, no such infrastructure exposures between 800 MHz and 2 GHz existed this close to so many people. Microwave ovens are the primary consumer product utilizing a high RF intensity, but their use is for very brief periods of time and ovens are shielded to prevent leakage above 1000 $\mu\text{W}/\text{cm}^2$ — the current FDA standard. In some cases, following the U.S. Telecommunications Act of 1996 preemption of local health considerations in infrastructure siting, antennas have been mounted within mere feet of dwellings. And, on buildings with roof-mounted arrays, exposures can be lateral with top floors of adjacent buildings at close range.

It makes little sense to keep denying health symptoms that are being reported in good faith. Though the prevalence of such exposures is relatively new to a widespread population, we, nevertheless, have a 50 year observation period to draw from. The primary questions now involve specific exposure parameters, not the reality of the complaints or attempts to attribute such complaints to psychosomatic causes, malingering, or beliefs in paranormal phenomenon. That line of argument is insulting to regulators, citizens, and their physicians. Serious mitigation efforts are overdue.

There is early Russian and U.S. documentation of long-term, very low-level exposures causing microwave sickness as contained in *The Johns Hopkins Foreign Service Health Status Study* done in 1978 (Lilienfield et al. 1978; United States Senate 1979). This study contains both clinical information, and clear exposure parameters. Called the Lilienfield study, it was conducted between 1953 and 1976 to determine what, if any, effects there had been to personnel

in the U.S. Embassy in Moscow after it was discovered that the Soviet government had been systematically irradiating the U.S. government compound there.

The symptoms reported were not due to any known tissue heating properties. The power densities were not only very low but the propagation characteristics were remarkably similar to what we have today with cell phone base stations. Lilienfield recorded exposures for continuous-wave, broadband, modulated RFR in the frequency ranges between 0.6 and 9.5 GHz. The exposures were long-term and low-level at 6 to 8 h per day, 5 days per week, with the average length of exposure time per individual between 2 to 4 years. Modulation information contained phase, amplitude, and pulse variations with modulated signals being transmitted for 48 h or less at a time. Radiofrequency power density was between 2 and 28 $\mu\text{W}/\text{cm}^2$ — levels comparable to recent studies cited in this paper.

The symptoms that Lilienfield found included four that fit the Soviet description for dermatographism — eczema, psoriasis, allergic, and inflammatory reactions. Also found were neurological problems with diseases of peripheral nerves and ganglia in males; reproductive problems in females during pregnancy, childbearing, and the period immediately after delivery (puerperium); tumor increases (malignant in females, benign in males); hematological alterations; and effects on mood and well-being including irritability, depression, loss of appetite, concentration, and eye problems. This description of symptoms in the early literature is nearly identical to the Santini, Abdel-Rassoul, and Narvarro studies cited earlier, as well as the current (though still anecdotal) reports in communities where broadcast facilities have switched from analog to digital signals at power intensities that are remarkably similar. In addition, the symptoms in the older literature are also quite similar to complaints in people with EHS.

Such reports of adverse effects on well-being are occurring worldwide near cell infrastructure and this does not appear to be related to emotional perceptions of risk. Similar symptoms have also been recorded at varying distances from broadcast towers. It is clear that something else is going on in populations exposed to low-level RFR that computer-generated RFR propagation models and obsolete exposure standards, which only protect against acute exposures, do not encompass or understand. With the increase in so many RFR-emitting devices today, as well as the many in the wings that will dramatically increase total exposures to the population from infrastructure alone, it may be time to approach this from a completely different perspective.

It might be more realistic to consider ambient outdoor and indoor RFR exposures in the same way we consider other environmental hazards such as chemicals from building materials that cause sick building syndrome. In considering public health, we should concentrate on aggregate exposures from multiple sources, rather than continuing to focus on individual source points like cell and broadcast base stations. In addition, whole categorically excluded technologies must be included for systems like Wi-Fi, Wi-Max, smart grids, and smart metering as these can greatly increase ambient radiation levels. Only in that way will low-level electromagnetic energy exposures be understood as the broad environmental factor it is. Radiofrequency radiation is a

form of energetic air pollution and it should be controlled as such. Our current predilection to take this one product or service at a time does not encompass what we already know beyond reasonable doubt. Only when aggregate exposures are better understood by consumers will disproportionate resistance to base station siting bring more intelligent debate into the public arena and help create safer infrastructure. That can also benefit the industries trying to satisfy customers who want such services.

Safety to populations living or working near communications infrastructure has not been given the kind of attention it deserves. Aggregate ambient outdoor and indoor exposures should be emphasized by summing up levels from different generating source points in the vicinity. Radiofrequency radiation should be treated and regulated like radon and toxic chemicals, as aggregate exposures, with appropriate recommendations made to the public including for consumer products that may produce significant RFR levels indoors. When indoor consumer products such as wireless routers, cordless/DECT phones, leaking microwave ovens, wireless speakers, and (or) security systems, etc. are factored in with nearby outdoor transmission infrastructure, indoor levels may rise to exposures that are unsafe. The contradictions in the studies should not be used to paralyze movement toward safer regulation of consumer products, new infrastructure creation, or better tower siting. Enough good science exists regarding long-term low-level exposures — the most prevalent today — to warrant caution.

The present U.S. guidelines for RFR exposure are not up to date. The most recent IEEE and NCRP guidelines used by the U.S. FCC have not taken many pertinent recent studies into consideration because, they argue, the results of many of those studies have not been replicated and thus are not valid for standards setting. That is a specious argument. It implies that someone tried to replicate certain works but failed to do so, indicating the studies in question are unreliable. However, in most cases, no one has tried to exactly replicate the works at all. It must be pointed out that the 4 W/kg SAR threshold based on the de Lorge studies have also not been replicated independently. In addition, effects of long-term exposure, modulation, and other propagation characteristics are not considered. Therefore, the current guidelines are questionable in protecting the public from possible harmful effects of RFR exposure and the U.S. FCC should take steps to update their regulations by taking all recent research into consideration without waiting for replication that may never come because of the scarcity of research funding. The ICNIRP standards are more lenient in key exposures to the population than current U.S. FCC regulations. The U.S. standards should not be “harmonized” toward more lenient allowances. The ICNIRP should become more protective instead. All standards should be biologically based, not dosimetry based as is the case today.

Exposure of the general population to RFR from wireless communication devices and transmission towers should be kept to a minimum and should follow the “As Low As Reasonably Achievable” (ALARA) principle. Some scientists, organizations, and local governments recommend very low exposure levels — so low, in fact, that many wireless industries claim they cannot function without many more antennas in a given area. However, a denser infrastructure may

be impossible to attain because of citizen unwillingness to live in proximity to so many antennas. In general, the lowest regulatory standards currently in place aim to accomplish a maximum exposure of 0.02 V/m, equal to a power density of 0.0001 $\mu\text{W}/\text{cm}^2$, which is in line with Salzburg, Austria’s indoor exposure value for GSM cell base stations. Other precautionary target levels aim for an outdoor cumulative exposure of 0.1 $\mu\text{W}/\text{cm}^2$ for pulsed RF exposures where they affect the general population and an indoor exposure as low as 0.01 $\mu\text{W}/\text{cm}^2$ (Sage and Carpenter 2009). In 2007, *The BioInitiative Report, A rationale for a biologically based public exposure standard for electromagnetic fields (ELF and RF)*, also made this recommendation, based on the precautionary principle (Bioinitiative Report 2007).

Citizens and municipalities often ask for firm setbacks from towers to guarantee safety. There are many variables involved with safer tower siting — such as how many providers are co-located, at what frequencies they operate, the tower’s height, surrounding topographical characteristics, the presence of metal objects, and others. Hard and fast setbacks are difficult to recommend in all circumstances. Deployment of base stations should be kept as efficient as possible to avoid exposure of the public to unnecessary high levels of RFR. As a general guideline, cell base stations should not be located less than 1500 ft (~ 500 m) from the population, and at a height of about 150 ft (~ 50 m). Several of the papers previously cited indicate that symptoms lessen at that distance, despite the many variables involved. However, with new technologies now being added to cell towers such as Wi-Max networks, which add significantly more power density to the environment, setback recommendations can be a very unpredictable reassurance at best. New technology should be developed to reduce the energy required for effective wireless communication.

In addition, regular RFR monitoring of base stations should be considered. Some communities require that ambient background levels be measured at specific distances from proposed tower sites before, and after, towers go online to establish baseline data in case adverse effects in the population are later reported. The establishment of such baselines would help epidemiologists determine what changed in the environment at a specific point in time and help better assess if RFR played a role in health effects. Unfortunately, with so much background RFR today, it is almost impossible to find a clean RFR environment. Pretesting may have become impossible in many places. This will certainly be the case when smart grid technologies create a whole new blanket of low-level RFR, with millions of new transceivers attached to people’s homes and appliances, working off of centralized RFR hubs in every neighborhood. That one technology alone has the ability to permanently negate certain baseline data points.

The increasing popularity of wireless technologies makes understanding actual environmental exposures more critical with each passing day. This also includes any potential effects on wildlife. There is a new environmental concept taking form — that of “air as habitat” (Manville 2007) for species such as birds, bats, and insects, in the same way that water is considered habitat for marine life. Until now, air has been considered something “used” but not necessarily “lived in” or critical to the survival of species. How-

ever, when air is considered habitat, RFR is among the potential pollutants with an ability to adversely affect other species. It is a new area of inquiry deserving of immediate funding and research.

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Board of Health

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Mission

The Needham Board of Health, founded in 1877, and its Public Health Division strive to prevent and control the spread of disease, to address environmental issues, to promote healthy lifestyles, and to protect the public health and social well-being of all Needham's residents, especially the most vulnerable.

Goals FY 2017 and 2018

Administrative

Ensure the necessary infrastructure to effectively provide essential public health services.

- Develop Public Health Division-wide communications strategy that incorporates a variety of methods (articles, videos, presentations to community groups, hosting of community forums) to ensure community outreach on pertinent public health issues.
- Pursue small grant funding opportunities to meet distinct community needs (similar to concussion education, and healthy aging initiatives).
- Enhance and refine financial tracking mechanisms to ensure complete and appropriate use of municipal, grant, and donated financial resources
- Develop processes and accrue resources to support the continual gathering of qualitative and quantitative data to inform the activities of the Public Health Division.
- Address the health and physical space challenges of the Public Health Division's office environment, and aggressively pursue an appropriate location for Public Health staff in the short, medium, and long-term.
- **Long-term** - Pursue Public Health Division accreditation and support the establishment of a culture of continuous quality improvement.

Community Health

Increase the quality, availability, and effectiveness of educational and community-based programs designed to prevent disease and injury, improve health, and enhance quality of life.

- Support existing community initiatives that address public health concerns including senior nutrition, elder isolation, mental health promotion, and domestic violence awareness.
- Sustain multi-disciplinary work to assist families and community members in need of mental health, domestic violence, and substance use support through the Needham Community Crisis Intervention Team (CCIT).
- Emphasize the importance of affordable and accessible housing as a public health issue for all Needham's residents and especially for the Town's senior citizens.
- Advocate for resources to support and enhance Healthy Aging in the community, such as accessible senior housing and more frequent forms of town or community-run transportation programs.

Emergency Management/Emergency Preparedness

Improve the community's ability to prevent, prepare for, respond to, and recover from a major emergency.

- Hire a part-time Emergency Management Coordinator to support achievement of Public Health Division and Town-wide emergency management goals.
- Revise and update Comprehensive Emergency Management Plan (CEMP), Hazard Vulnerability Analysis (HVA), and municipal safety and emergency guidelines.
- Establish a detailed calendar depicting assigned dates for training, exercises, and updates/revisions to existing emergency plans.
- Work towards full certification of the Needham Local Emergency Planning Committee (LEPC), and state and federal recognition as such.

Environmental Health (EH)

Promote health for all through a healthy environment

- Hire additional staff to maintain EH Unit capacity for inspections, environmental health monitoring, training, and vendor and general public education.
- Prioritize positive communication and relationships with food service owners and staff and tobacco vendor owners and staff.
- Develop regular schedule for detailed review and revision of all regulations
 - Review and revise Tobacco regulations (2017).
 - Review and revise Trash Haulers regulations (2017).
 - Review and revise Private Well regulations (2017-2018).
- Identify best practices and optimal platforms for electronic inspection reporting capacity.

Environmental Health (EH) continued

Promote health for all through a healthy environment

- **Long-term** - Research best practices and pursue regulatory standards for posting of calorie counts and nutritional information (FY 2018).
- **Long-term** - Develop and implement food establishment grading policies (FY 2020 approximately).

Public Health Nursing

Advance population health through quality community/ public health nursing education, research and service.

- Prepare for 2017 staff transition.
- Examine community demographics and population needs to identify priorities for public health nursing staff capabilities.
- Review and assess Needham's public health nursing capabilities.
- Develop community outreach calendar of focused educational and training programs such as sunscreen, tick borne illnesses, and other timely public health nursing issues.

Substance Use Prevention

Reduce substance use and misuse to protect the health, safety, and quality of life for all, especially children.

- Provide education and information to community about adverse health impacts of substance use and misuse for the youth, adult, and senior populations.
- Advocate for community level policy changes to impact access and availability of alcohol, akin to raising purchase age for tobacco and reducing sale outlet density.
- Expand community support for addressing alcohol compliance in the same fashion as tobacco compliance, with increased inspections (goal of semi-annual) and compliance checks (long-term goal of quarterly, interim goal of semi-annual).
- Increase awareness of proper prescription medication disposal options and secure storage practices within the Town of Needham.
- Research and develop regulations that will govern the use of recreational marijuana, and revise existing regulations that govern medical marijuana. The overall goal of such regulations should be to ensure the safe and sanitary operations of marijuana dispensaries and recreational marijuana establishments, while at the same time educating the community about the dangers of chronic use and general misuse of marijuana, and promoting a safe and healthy environment for all of Needham's residents.
- **Long-term** - Secure commitment for secondary safe and secure disposal locations for prescription medications, in addition to current medication disposal kiosk at the Police Station and the pair of sharps disposal kiosks at the RTS (FY 2020 approximately).

A2 Thursday, March 29, 2018 | NEEDHAM TIMES

Vaping explained: five things you should know

By Stefan Geller
sgeller@wickedlocal.com

Needham school officials held a public information session on the details of vaping last Thursday night at Pollard Middle School. The goal was to inform parents about the devices and the rising popularity of them in school.

Growing popularity

"More kids are willing to try e-cigarettes or vaporizers than they will cigarettes," said Officer O'Leary.

According to a 2016 MetroWest Adolescent Health Survey, 26 percent of Needham high students said they had tried using e-cigarettes and 16 percent reported using them in a typical month.

Why do they vape?

Sicotte and O'Leary believe the main reasons

to the risks of use and what can be done as parents. Here are five things they say you should know about vaping:

students have gotten into vaping are because they are curious about the devices and the experience of vaping, they like the flavors that vaporizers contain, they may feel pressured by their peers, they are impressed by the smoke tricks that people can do with them and they believe that vaporizers are safer than cigarettes.

Lack of awareness

O'Leary presented a slide with information provided from the National Institute on Drug Abuse, which stated that in a national survey of 12th graders, 62.8 percent of them who vaped thought that they were inhaling flavoring, 24.9 percent thought they were inhaling nicotine, 6.8 percent thought they were inhaling THC and 5.5 percent didn't know what they were inhaling. But according to Sicotte, that 5.5 percent is a misleading number.

"I would argue that the 62.8 percent that said they were smoking something flavored should all be in the 'I don't know' category. Nobody knows what most of these chemicals are, your children can't identify what those chemicals are," Sicotte said. "There's not a lot of research right now. These are still fairly new so there's not a lot of information on it."

How they work

Vaping devices typically have three main components: a rechargeable battery, a heating compartment and a cartridge where the e-liquid is deposited and where the vapor is inhaled from.

They can be used for inhaling flavored e-liquid, which more often than not contains differing levels of nicotine, as well as marijuana dabs, which are highly concentrated doses of THC.



E-cigarettes and vaporizers are growing in popularity among youth. (COURTESY PHOTO)

The risks

The main risk that Sicotte and O'Leary said these vaporizers pose is causing a nicotine addiction among the kids who use them, as well as acting as a gateway to use of harder substances.

However, because the devices are relatively new, they said the biggest concern

is that the possible dangers are still unknown.

"When we did the research, we tried to look up the harm this does to the body from these chemicals and scientists don't even know yet. They know it's not good, they're chemicals that you're still inhaling, but they don't know what the end result is going to be," O'Leary said.

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TOWN OF NEEDHAM LEGAL NOTICE NOTICE OF PUBLIC HEARING

At a public meeting held on March 9, 2018, the Board of Health of the Town of Needham, County of Norfolk, Massachusetts, acting under the authority of Chapter 111, Section 31 of the Massachusetts General Laws, voted to adopt the 2013 Food Code and 2015 Food Code Supplement. These new standards will replace the 1999 Food Code and will be implemented in July 2018. The updated food code includes science-based changes for how food is handled and stored to help reduce the five major foodborne illness risk factors as established by the Centers for Disease Control (CDC). This summary shall serve as notice to all.

weekly 3/22/18

2013 FOOD CODE & 2015 FOOD CODE SUPPLEMENT

LEGAL NOTICE

At a public meeting held on March 9, 2018, the Board of Health of the Town of Needham, County of Norfolk, Massachusetts, acting under the authority of Chapter 111, Section 31 of the Massachusetts General Laws, voted to adopt the 2013 Food Code and 2015 Food Code Supplement. These new standards will replace the 1999 Food Code and will be implemented in July 2018. The updated food code includes science-based changes for how food is handled and stored to help reduce the five major foodborne illness risk factors as established by the Centers for Disease Control (CDC). This summary shall serve as notice to all.

AD#13671613

Needham Times 3/29/18

ool cer training

igned as school resource
cer at King Philip Middle
ool. She presents across the
on to other officers, parents
teachers. The program name
he acronym for Leadership,
owerment, Awareness, and
ection.

he L.E.A.P training sessions
s on strategies and scenarios
e the officers become agents
kill building and positive
ing for the students," District
ney Morrissey said. "It
rates research on social-
ional learning into the work
officers do in our schools.
er Palladino started by
ng at what research shows
s kids happy, healthy, safe

and resilient," and then looked at
how SROs can help build those
skills.

"Each school has its own culture
and climate. Healthy, positive
schools are safer schools,"
Morrissey said. "The success of
our school resource officers
depends both on the caliber of the
person in that role and in the
quality of training and support
they get. The L.E.A.P Model for
Student Success was a natural
resource to share with the student
resource officers in Norfolk
County."

Morrissey thanked Foxborough
Police Chief William Baker for
donating the use of the training
space at his police station.



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SPAN, Needham Schools raising vaping awareness

Weekly
3/22/18

It only takes a few minutes of
searching online to find examples
of students bragging about
discreetly getting high in class, in
their bedrooms, with friends at
parties, and on the streets of their
town through the use of vapes
(e-cigarettes).

E-cigarettes (Vapes) appeared in
the US about 10 years ago. They are
an electronic nicotine delivery
system which consists of a cartridge
containing a liquid, an atomizer
(vaporization chamber with a
heating element), and a battery.
Their initial purpose was to help
people stop smoking. Unfortunately,
vapes have turned into a discreet
and easily accessible tool which
some teens use to inhale everything
from actual nicotine to various
flavored juices, marijuana oil, and
synthetics.

Among medical professionals,
there is general agreement that
teens that use vapes expose
themselves to cancer-causing
toxins, particularly if they choose
popular fruit- flavored products
that these vapes are often sold with.

Dr. Jane Fogg, the Chair of
Internal Medicine & Population
Health at Atrius Health and the
Chair of the Needham Board of
Health, said that "although the key
concern of vaping has traditionally
been nicotine addiction, the current
trend of youth vaping with juices is
a cause of serious concern for health
officials because there has been
insufficient research about the
toxicity of these substances as they
are inhaled into the lungs of our
teens."

A National Institute of Health
study which attempted to identify
whether chemical toxicants are
associated with adolescent
e-cigarette usage was the subject of
a recent article in the peer-
reviewed journal Pediatrics. Dr.
Mark Rubinstein and a team of
colleagues from the University of
California, San Francisco, found

between 2013 and 2014 and
continues to rise. Findings from the
2014 National Youth Tobacco
Survey show that current e-cigarette
use (use on at least 1 day in the past
30 days) among high school
students increased from
approximately 660,000 to 2 million
students. Among middle school
students, current e-cigarette use
more than tripled from
approximately 120,000 to 450,000
students.

Aaron Sicotte, Principal of
Needham High School and the
keynote speaker at the "Vaping
Explained" event to be hosted by
the Needham Parents Care (NPC)
and the Substance Prevention
Alliance of Needham (SPAN) on
March 22, noted: "Most students
are making good decisions overall,
but vaping is a pretty popular
practice. Students are able to keep a
vape in their pocket, pull it out and
use it without leaving an odor or
other signs that they have been
vaping in between classes or on
school property. Most of the
students don't understand the
consequences of vaping.
Unfortunately, regulations to curb
this practice have not caught up
with the popular trend, and teen's
health continues to be at risk. Our
approach at Needham High School
is to provide education for students,
teachers and parents about the
dangers of this practice."

For parents or community
members who may be concerned or
would like to learn more about
vaping, an ideal opportunity will
occur later this month. On March
22, NPC and SPAN will host
"Hidden in Plain Sight," an
interactive display intended to help
parents and guardians recognize
signs of risk, use, and paraphernalia
in a teenager's bedroom. In
addition, at 7:30 p.m. at Pollard
Middle School, Needham High
School Principal Aaron Sicotte and
Needham School Resource Officer

there is general agreement that teens that use vapes expose themselves to cancer-causing toxins, particularly if they choose popular fruit-flavored products that these vapes are often sold with.

Dr. Jane Fogg, the Chair of Internal Medicine & Population Health at Atrius Health and the Chair of the Needham Board of Health, said that "although the key concern of vaping has traditionally been nicotine addiction, the current trend of youth vaping with juices is a cause of serious concern for health officials because there has been insufficient research about the toxicity of these substances as they are inhaled into the lungs of our teens."

A National Institute of Health study which attempted to identify whether chemical toxicants are associated with adolescent e-cigarette usage was the subject of a recent article in the peer-reviewed journal *Pediatrics*. Dr. Mark Rubinstein and a team of colleagues from the University of California, San Francisco found that urine tests of adolescent e-cigarette users indicated elevated levels of five different volatile organic compounds, all of which are known or suspected carcinogens.

According to the Centers for Disease Control and Prevention, e-cigarette (vape) usage among middle and high schoolers tripled

vape in their pocket, pull it out and use it without leaving an odor or other signs that they have been vaping in between classes or on school property. Most of the students don't understand the consequences of vaping. Unfortunately, regulations to curb this practice have not caught up with the popular trend, and teen's health continues to be at risk. Our approach at Needham High School is to provide education for students, teachers and parents about the dangers of this practice."

For parents or community members who may be concerned or would like to learn more about vaping, an ideal opportunity will occur later this month. On March 22, NPC and SPAN will host "Hidden in Plain Sight," an interactive display intended to help parents and guardians recognize signs of risk, use, and paraphernalia in a teenager's bedroom. In addition, at 7:30 p.m. at Pollard Middle School, Needham High School Principal Aaron Sicotte and Needham School Resource Officer Ryan O'Leary will provide an in-depth review of the challenges of youth vaping, its health and safety consequences, and the impacts in schools. Pollard Middle School Principal Tamatha Bibbo will be moderating an open dialogue with parents and concerned community members. This meeting is free of charge and open to the public.

Rep. Garlick announces office hours

Representative Denise Garlick has announced her local office hours in Needham for April. Constituents are encouraged to visit the Representative, and are welcome to share their issues and concerns. No appointments are necessary and meetings are held on a first-come, first-served basis.

In order to accommodate all visitors to office hours, those requiring an extended time to speak with Representative Garlick are asked to contact the office to schedule an alternative time to

meet in Needham.

Office hours will be held on April 2 from 11:00 a.m. to 12:30 p.m. at the Center at the Heights, 300 Hillside Ave, Needham, and from 5:30 to 7:00 p.m. at the Needham Public Library on 1139 Highland Ave.

Do not hesitate to contact the office by mail at State House, Room 33, Boston, MA 02133, by telephone at (617-722-2060), or by e-mail at Denise.Garlick@MAHouse.gov with any questions.



Please join us on **Thursday, March 22**
for a community presentation
at Pollard Middle School

"Vaping Explained"

with NHS Principal **Aaron Sicotte**
and School Resource Officer **Ryan O'Leary**,
Moderated by Pollard Principal **Tamatha Bibbo**

7:30-8:30 pm in the Pollard Middle School Auditorium

&

A 20-minute tour of

"Hidden in Plain Sight,"

an interactive display of a teenager's bedroom.

Open: 9:00 am-2:00 pm, 7:00-7:30 pm, and 8:30-9:00 pm

Exhibit is open to all adults over the age of 21.
Pollard Middle School Media Center, 200 Harris Avenue in Needham

Free of charge. Registration recommended for speaker event:
<https://vapingexplained.eventbrite.com>

Hidden in Plain Sight is an interactive display of a teenager's bedroom which contains common items that can hide substances, and helps parents to "spot" signs of at-risk behavior in their teen. Visitors will receive education about substance use from trained volunteers followed by a tour of the model bedroom. This exhibit is an integral part of community education and encourages parents to talk to their children about at-risk behaviors that can lead to opioid use, addiction, and substance use disorders.

This presentation is sponsored by Needham Parents Care, The Needham Prescription Drug Action Team, Substance Prevention Alliance of Needham (SPAN) and Beth Israel Deaconess Hospital-Needham.



Beth Israel Deaconess Hospital
Needham

NWCN13568115

times 2/18/18



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Beth Israel Deaconess Hospital-
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Town of Needham Public Health Division

Recently the Needham Public Health Division received a grant from the FDA to support the adoption of the 2013 Food Code and 2015 Food Code Supplement from the U.S. Food and Drug Administration (FDA). Needham's Public Health Division currently uses the 1999 Food Code with state specific food regulations for enforcement. The state of Massachusetts as a whole is looking to uniformly adopt the 2013 Food Code at some point in the near future. While a majority of cities and towns in Massachusetts still use the 1999 Food Code, there are some communities which have adopted the 2013 Food Code with the 2015 supplement ahead of the rest of the state. The Town of Needham may be the next town to do so. The new code brings in some science-based changes for how food is handled and stored to help reduce the five major foodborne illness risk factors as established by the Centers for Disease Control (CDC). The Needham Public Health Division believes that these changes will provide benefits for both the food industry and regulators.

At its monthly 7:00 a.m. meeting on March 9th at the Needham Golf Club, the Needham Board of Health will vote upon whether to adopt 2013 Food Code and 2015 Food Code Supplement. If approved by a Board vote, the new standards would take effect in July 2018. Comments will be accepted at the March 9th public meeting, and will also be accepted through Wednesday March 7th in writing via electronic or postal mail. Please send comments to healthdepartment@needhamma.gov or to Public Health Department, 1471 Highland Avenue, Needham, MA 02492. A copy of this notice is available for interested parties to review on the Public Health Division's website at www.needham.gov/health.

Weekly 3/1/18

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AD/13662751
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Times

Needham LEPC is state-certified

The Needham Local Emergency Planning Committee (LEPC) was recently certified by the State Emergency Response Commission. The Local Emergency Planning Committee's goal is to ensure the community is ready to respond during any emergency. This goal is accomplished by encouraging partnerships between the town, state, local businesses and residents through the exchange of information, mutual planning, and public outreach.

On January 8, Doug Forbes from the Massachusetts Emergency

Management Agency (MEMA) presented the LEPC Certification to community officials. "I would like to commend all the members of the Needham Local Emergency Planning Committee for their hard work and dedication," Mr. Forbes said. "Thanks to their efforts, the Town of Needham is a stronger and safer place in which to live and work. The State Emergency Response Commission has unanimously approved the Needham application for State Certification. Congratulations for a job well done!"

"It is great to see a community like Needham invested in planning for emergencies," said Rebecca Ping, the Town of Needham's Local Emergency Program coordinator. "The Town leadership is very supportive and the community is very active in helping us plan for the unexpected. A response to any emergency starts locally so it is important to identify risks, detect gaps, and analyze current policies, to improve our response capabilities. I appreciate the LEPCs dedication and hard work to this important mission."



From left to right: Rebecca Ping (Emergency Management Program Coordinator, Town of Needham), Doug Forbes (Local Coordinator, MEMA), Dennis Condon (Fire Chief and Emergency Management Director, Town of Needham), Timothy McDonald (Director of Health and Human Services and Assistant Emergency Management Director, Town of Needham), Kate Fitzpatrick (Town Manager, Town of Needham)

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📅 **February 28, 2018**

👤 **Hometown Weekly Staff** (<http://www.hometownweekly.net/author/hometown-weekly-staff/>)

🔖 **Doug Forbes** (<http://www.hometownweekly.net/tag/doug-forbes/>), **LEPC Certification** (<http://www.hometownweekly.net/tag/lepc-certification/>), **Massachusetts Emergency Management Agency** (<http://www.hometownweekly.net/tag/massachusetts-emergency-management-agency/>), **Needham Local Emergency Planning Committee (LEPC)** (<http://www.hometownweekly.net/tag/needham-local-emergency-planning-committee-lepc/>), **Rebecca Ping** (<http://www.hometownweekly.net/tag/rebecca-ping/>), **State Emergency Response Commission** (<http://www.hometownweekly.net/tag/state-emergency-response-commission/>)



Written by Hometown Weekly Staff (<http://www.hometownweekly.net/author/hometown-weekly-staff/>)

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