AGENDA
REGULAR MEETING

September 2, 2014
4:30 p.m.

ST. JOHN'S

MEMORANDUM

September 2, 2014

In accordance with Section 42 of the City of St. John's Act, the Regular Meeting of the St. John's Municipal Council will be held on **Tuesday, September 2, 2014 at 4:30 p.m.**

This meeting will be preceded by a Special Meeting to be held on the same day in Conference Room A at 3:30 **p.m.**

By Order

Elaine A. Henley

Elaine Henley
City Clerk

AGENDA
REGULAR MEETING
September 2, 2014
4:30 p.m.

At appropriate places in this agenda, the names of people have been **removed or edited out so as to comply with the Newfoundland and Labrador Access to Information and Protection of Privacy Act.**

1. Call to Order

2. Approval of the Agenda

3. Adoption of the Minutes - August 25, 2014

4. Business Arising from the Minutes

A. Included in the Agenda

B. Other Matters

5. Notices Published:

a. A Discretionary Use Application has been submitted to the City by Bell Mobility Inc. seeking approval of site design in relation to a **telecommunications rooftop site** at **411 Stavanger Drive** on **Hampton Inn & Suites Hotel**.

In accordance with the City of St. John's Siting Protocol for Wireless Facilities, the City of St. John's hereby notifies in the vicinity of 411 Stavanger Drive of the intention of Bell Mobility Inc. to install an antenna system consisting of antennas flush mounted to the building in a gooseneck style, and finished to match the color of the building.

(Submissions received and attached)

b. A Discretionary Use application has been submitted to the City by **Bell Mobility Inc**. seeking approval of site design in relation to a **telecommunications rooftop site** at **10 Factory Lane** on the Fort William Building.

In accordance with the City of St. John's Siting Protocol for Wireless Facilties, the City of St. John's hereby notifies residents in the vicinity of 10 Factory Lane of the intention of Bell Mobility Inc. to install an antenna system consisting of antennas mounted to the building façade, and finished to match the color of the building.

(Submission received and attached)

c. A Discretionary Use Application has been submitted by **MRA Architecture & Design** requesting approval to establish and operate a **national brand coffee shop with drive-thru, a service station with convenience store and a drive-thru car washing facility located** at **Hebron Way**. The application satisfies all the requirements of Section 7.30 Drive-Thru Facilities of the St. John's Development Regulations and has the required separation distance from a residential zone. The proposed coffee shop with drive-thru will have a total floor area of 174.2 m^2, the service station with convenience store will have a total floor area of 279.0 m^2 and the car washing facility will have a total floor area of 159.6 m^2 On-site parking will be provided.

(No submissions received)

6. Public Hearings

7. Committee Reports

a. Finance & Administration Standing Committee Report – August 12, 2014 (Supplementary Report)
b. Public Works Standing Committee Report – August 21, 2014
c. Special Events Advisory Committee Report - August 25, 2014

8. Resolutions

9. Development Permits List (August 21 - 27, 2014)

10. Building Permits List (August 21 – 27, 2014)

11. Requisitions, Payrolls and Accounts (Week Ending August 27, 2014)

12. Tenders:

a. Tender – Shop Supplies
b. Tender – Curb Runners

13. Notices of Motion, Written Questions and Petitions

14. Other Business

15. Adjournment

August 25, 2014

The Regular Meeting of the St. John's Municipal Council was held in the Council Chamber, City Hall at 4:30 p.m. today.

Deputy Mayor Ron Ellsworth presided.

There were present also: Councillors Hann, Hickman, Lane, Breen, Puddister, Galgay, Davis, Tilley and Collins.

Regrets: Mayor O'Keefe and Councillor Puddister.

The City Manager; City Clerk; Deputy City Manager of Public Works; Deputy City Manager of Community Services; Deputy City Manager of Planning, Development & Engineering; Deputy City Manager of Financial Management; Deputy City Manager of Corporate Services; Acting Chief Municipal Planner; City Solicitor; and Senior Legislative Assistant were also in attendance.

Call to Order and Adoption of the Agenda

SJMC2014-08-25/361R
It was decided on motion of Councillor Breen; seconded by Councillor Collins: That the Agenda be adopted as presented.

The motion being put was unanimously carried.

Adoption of Minutes

SJMC2014-08-25/362R
It was decided on motion of Councillor Tilley; seconded by Councillor Lane: That the minutes of August 11, 2014 be adopted as presented.

The motion being put was unanimously carried.

Notice of Motion

Council considered the notice of motion put forward by Councillor Hickman at the Regular Meeting of Council dated August 11, 2014.

SJMC2014-08-25/363R
It was decided on motion of Councillor Hickman; seconded by Councillor Lane: That Council rescind the decision of July 28, 2014 approving the design of windows put forth by the property owner of 133 Gower Street which contravene the City's Heritage regulations.

The motion being put was carried with Councillor Galgay dissenting.

SJMC2014-08-25/364R
Moved by Councillor Lane; seconded by Councillor Hickman: That Council accept the recommendation of the Heritage Advisory Committee as outlined in its report of July 11, 2014 as follows:

133 Gower St. – Application for Window Installation
The owner of the property has applied to install windows on the front façade which are contrary to the requirements outlined for the heritage area.

The Committee recommends that the configuration of windows proposed by the applicant be rejected as they are contrary to the guidelines for the Heritage Area. The Committee further recommends that the openings conform to those that exist in the adjoining properties to the east and west of the building. The Committee also agreed with the Heritage Officer's proposed window styles and configurations:

- ***1st floor: 48"w x 60" h (double unit)***
- ***2nd floor: 30"w x 60" h***
- ***3rd floor: 30"w x 56" h***

The motion being put was carried with Councillor Galgay dissenting.

St. John's Municipal Plan Amendment Number 126, 2014 and St. John's Development Regulations Amendment No. 588, 2014 to allow townhouses throughout Planning Area 4 – Mundy Pond in the Residential Medium Density (R2) Zone - 12 Jensen Camp Road, Ward 3

Council considered a memorandum dated August 20, 2014 from the Director of Planning and Development.

SJMC2014-08-25/365R
It was decided on motion of Councillor Tilley; seconded by Councillor Davis: That the resolution for St. John's Municipal Plan Amendment Number 126, 2014, and St. John's Development Regulations Number 588, 2014, as adopted by Council on July 15, 2014 be approved. These amendments will now be referred by City staff to the Department of Municipal and Intergovernmental Affairs with a request for Provincial registration.

RESOLUTION
ST. JOHN'S MUNICIPAL PLAN
AMENDMENT NUMBER 126, 2014

WHEREAS the City of St. John's wishes to allow townhouses throughout Planning Area 4 – Mundy Pond.

BE IT THEREFORE RESOLVED that the City of St. John's hereby adopts the following text amendment to the St. John's Municipal Plan in accordance with the provisions of the Urban and Rural Planning Act.

> **Amend Part IV "Planning Area 4 – Mundy Pond", Section 4.2.2 ("Residential Medium and High Density" by adding the following sentence:**
>
> **"However, for properties that do not have frontage along Blackmarsh Road, Council shall have the discretion to introduce zones that permit multi-family housing".**

BE IT FURTHER RESOLVED that the City of St. John's requests the Minister of Municipal and Intergovernmental Affairs to register the proposed amendment in accordance with the requirements of the Urban and Rural Planning Act, 2000.

IN WITNESS THEREOF the Seal of the City of St. John's has been hereunto affixed and this Resolution has been signed by the Mayor and the City Clerk on behalf of Council this ____ day of **_____, 2014.**

_____
Mayor

_____
City Clerk

_____
Council Adoption

_____
MCIP
I hereby certify that this Amendment has been prepared in accordance with the Urban and Rural Planning Act, 2000.

_____
Provincial Registration

RESOLUTION
ST. JOHN'S DEVELOPMENT REGULATIONS
AMENDMENT NUMBER 588, 2014

WHEREAS the City of St. John's wishes to allow townhouses throughout Planning Area 4 – Mundy Pond.

BE IT THEREFORE RESOLVED that the City of St. John's hereby adopts the following text amendment to the St. John's Development Regulations pursuant to the provisions of the Urban and Rural Planning Act.

> **Amend the Residential Medium Density (R2) Zone table, Section 10.4.1(i) "Townhousing" by deleting the phrase "and except for Planning Area 4 – Mundy Pond, where Townhousing is restricted to Blackmarsh Road and the area bounded by L'Anse aux Meadows Crescent, Captain Whelan Drive, and Columbus Drive" from the Permitted Uses section.**

BE IT FURTHER RESOLVED that the City of St. John's requests the Minister of Municipal and Intergovernmental Affairs to register the proposed amendment in accordance with the requirements of the Urban and Rural Planning Act, 2000.

IN WITNESS THEREOF the Seal of the City of St. John's has been hereunto affixed and this Resolution has been signed by the Mayor and the City Clerk on behalf of Council this **____** day of **_____, 2014**.

Mayor

MCIP
I hereby certify that this Amendment has been prepared in accordance with the Urban and Rural Planning Act, 2000.

City Clerk

Council Adoption

Provincial Registration

The motion being put was unanimously carried

St. John's Municipal Plan Amendment Number 130, 2014: Amendment to the Residential Land Use Designations

Council considered a memo dated August 19, 2014 from the Director of Planning & Development regarding the above noted matter.

SJMC2014-08-25/366R

It was decided on motion of Councillor Hann; seconded by Councillor Tilley: That Council adopt the attached resolution for St. John's Municipal Plan Amendment Number 130, 2014, to amend the Residential Low Density, Residential Density, Residential High Density and Residential Downtown Land-Use Districts. Further that Council appoint Mr. Stan Clinton, MCIP , a member of the City's commissioner list, as the commissioner to conduct a public hearing on the Municipal Plan Amendment. The proposed date for the public hearing is Thursday, September 18, 2014 at 7 pm at St. John's City Hall.

RESOLUTION
ST. JOHN'S MUNICIPAL PLAN
AMENDMENT NUMBER 130, 2014

WHEREAS the City of St. John's wishes amend the Residential Districts of the St. John's Municipal Plan as follows:

BE IT THEREFORE RESOLVED that the City of St. John's hereby adopts the following text amendment to the St. John's Municipal Plan in accordance with the provisions of the Urban and Rural Planning Act:

1. **"Repeal Part III Section 2.3.1 – "Maximum Permitted Density" in the Residential Low Density (RLD) Land Use District and replace it with the following new section:**

   Lot Area and Density

   Minimum Lot Area and/or Maximum Density, in terms of dwelling units per Lot, shall be as set forth in the Zone Requirements of the St. John's Development Regulations.

2. **Repeal Part III Section 2.3.2 – "Maximum Permitted Density" in the Residential Medium Density (RMD) Land Use District and replace it with the following new section:**

   Lot Area and Density

Minimum Lot Area and/or Maximum Density, in terms of dwelling units per Lot, shall be as set forth in the Zone Requirements of the St. John's Development Regulations.

3. **Repeal Part III Section 2.3.3 – "Maximum Permitted Density" in the Residential High Density (RHD) Land Use District and replace it with the following new section:**

   Lot Area and Density

   Minimum Lot Area and/or Maximum Density, in terms of dwelling units per Lot, shall be as set forth in the Zone Requirements of the St. John's Development Regulations.

4. **Repeal Part III Section 2.3.4 – "Maximum Permitted Density" in the Residential Downtown (RD) Land Use District and replace it with the following new section:**

   Lot Area and Density

   Minimum Lot Area and/or Maximum Density, in terms of dwelling units per Lot, shall be as set forth in the Zone Requirements of the St. John's Development Regulations."

BE IT FURTHER RESOLVED that the City of St. John's requests the Minister of Municipal and Intergovernmental Affairs to register the proposed amendment in accordance with the requirements of the Urban and Rural Planning Act, 2000.

IN WITNESS THEREOF the Seal of the City of St. John's has been hereunto affixed and this Resolution has been signed by the Mayor and the City Clerk on behalf of Council this 11th day of August, 2014.

Mayor

MCIP
I hereby certify that this Amendment has been prepared in accordance with the Urban and Rural Planning Act, 2000.

City Clerk

Council Adoption

Provincial Registration

The motion being put was unanimously carried.

Proposed rezoning to Apartment Medium Density (A2) 11368 NL. Ltd. on behalf of Northern Property REIT – 146-148 Ladysmith Drive (Ward 5)

Council considered a memorandum dated August 21, 2014 from the Director of Planning and Development.

SJMC2014-08-25/367R
It was decided on motion of Councillor Hann; seconded by Councillor Davis: That along the eastern side of the subject property, the zone boundary designating Open Space lands be shifted to coincide with the new EVA boundary, rezoning a portion of land zoned Open Space (O) to the Apartment Medium Density (A2) Zone. This rezoning can be considered as part of 11368 NL. Ltd./Northern Property REIT application.

The motion being put was unanimously carried.

Notices Published

Council considered the following notices published:

A discretionary use application has been submitted by Rogers Communications Inc. requesting concurrence to construct a telecommunications tower at 175 Conception Bay South By-Pass Road.

In accordance with its obligations, under the Radiocommunication Act and Industry Canada's Tower Siting Procedures CPC-2-0-3, the City of St. John's hereby notifies residents in the vicinity of 175 Conception Bay South Bypass Road of Roger's intention to install an antenna system consisting of:

- A forty-five (45) metre high self-support tower;
- A 2.89m X 2.135m equipment shelter; and
- A 1.8 metre high steel wire fence surrounding the proposed area.

(One submission has been received)

SJMC2014-08-25/368R
It was decided on motion of Councillor Tilley; seconded by Councillor Lane: That Council approve the above noted applications subject to all applicable City requirements.

The motion being put was unanimously carried.

Finance and Administration Standing Committee Report – August 12, 2014

The Committee considered the following report.

IN ATTENDANCE:

Councillor Danny Breen, Chairperson
Councillor Bruce Tilley
Councillor Bernard Davis
Councillor Jonathan Galgay
Councillor Dave Lane
Councillor Wally Collins
Mr. Robert Bishop, Deputy City Manager, Financial Management
Mr. Paul Mackey, Deputy City Manager, Public Works
Mr. Dave Blackmore, Deputy City Manager, Planning, Development & Engineering
Ms. Jill Brewer, Deputy City Manager, Community Services
Mr. Sean Janes, City Internal Auditor
Ms. Maureen Harvey, Senior Legislative Assistant

1. Delegation from the East Coast Music Association re: ECMA Awards 2015

The Committee welcomed a delegation from the East Coast Music Association.

The delegation informed the Committee that the East Coast Music Association will host the ECMA Awards during the period April 8-12, 2015. Mr. McLean provided the Committee with gave an in-depth presentation about ECMA and the Awards Program (a copy of which is available from the Office of the City Clerk)

Mr. McLean advised the Committee that the operating budget for the awards is $1.35 million of which $250,000 will be provided by the Province; $200,000 by the Federal Government. He is requesting a subsidy from the City in the amount of $100,000 for which the City will receive a comprehensive sponsorship package.

Recommendation
On a motion by Councillor Collins; seconded by Councillor Lane it was moved that the request for an amount of $100,000 for the East Coast Music Awards 2015 be directed to the 2015 budget process with a recommendation for approval.

The Committee was in agreement that the Association continue its efforts to secure Mile One or an alternate acceptable venue within the City for the Gala.

2. Memorandum dated July 29, 2014 from Deputy City Manager, Community Services re: Canadian Parking Association Conference, September 27-30, 2014

The Committee considered the above noted memorandum which advised the City of St. John's is hosting the Canadian Parking Association (CPA) Conference, September 27-30, 2014, with an estimated attendance of over 300 delegates. The CPA has requested the City to host a reception at the opening of the Trade Show at the Convention Centre. This reception cannot be held at City Hall due to the number of delegates.

Recommendation:
On a motion put forth by Councillor Davis; seconded by Councillor Galgay: The Committee acknowledges that while it has no financial obligation for the Canadian Parking Association Conference, it is recommended that approval be given for an amount of $5,000 for the Opening Reception.

3. Memorandum dated July 25, 2014 from the Acting City Solicitor re: Policies to be repealed.

The Committee considered the memo which advised the Legal Department has been contacted by the responsible managers with respect to certain Corporate and Operational Policies and whether or not such policies are properly worded and/or reflective of our practices and/or responsibilities.

A. Policy 01-03-01 – Emergency/Disaster Four Wheel Drive Operations

Recommendation
That Policy 01-03-01 entitled Emergency/Disaster Four Wheel Drive Operations be repealed.

B. Policy 03-07-32 – Pursuit of Damages Options – Third Party Insurers vs. WHSCC

Recommendation
That Policy 03-07-32 – Pursuit of Damages Options – Third Party Insurers vs. WHSCC be repealed on the basis redundancy.

C. Policy 08-02-01 – Retaining Walls

Recommendation
That Policy 08-02-01 – Retaining Walls be repealed. A new policy will be drafted with accurately sets out the City's obligations and practices.

4. Request from St. John's Amateur Baseball Association

The Committee entertained a request from the St. John's Amateur Baseball Association for a a hosting/special event grant from the City for the upcoming 2014 Senior Men's National Championships. The purpose of the grant would be to assist in two main areas – field maintenance and the opening banquet/homerun derby.

Recommendation
The Committee recommends approval to provide in-kind support in the form of field maintenance at a cost of approximately $3,800 for the 2014 Men's National Baseball Championships.

SJMC2014-08-25/369R
It was decided on motion of Councillor Breen; seconded by Councillor Lane: that the Finance & Administration Standing Committee report of August 12, 2014 be adopted as presented with the exception of No. 5 (Request from Clean St. John's) which will be considered under separate cover.

The motion being put was unanimously carried.

SJMC2014-08-25/370R
Moved by Councillor Breen; seconded by Councillor Lane: That approval be given to pay registration in the amount of $505 for one member of Clean St. John's to attend the Communities in Bloom National Symposium and Awards Ceremony.

The motion being put was unanimously carried.

Planning and Development Standing Committee Report – August 19, 2014

The Committee considered the following report.

In Attendance: Councillor Tom Hann, Chairperson
Councillor Bruce Tilley
Councillor Danny Breen
Councillor Wally Collins
Neil Martin, City Manager
Dave Blackmore, Deputy City Manager of Planning, Development & Engineering
Jason Sinyard, Director – Planning & Development
Lindsay Lyghtle-Brushett - Planner
Maureen Harvey, Senior Legislative Assistant

a. 729 Fowler's Road, Ward 5
Application to Rezone Land to Institutional (INST) Zone and
Proposed Residential Addictions Recovery and Treatment Facility
Applicant: Teen Challenge Canada

The Committee considered a memorandum dated August 15, 2014 from the Chief Municipal Planner noting that Teen Challenge Canada has applied to have property situated at 729 Fowler's Road rezoned to the Institutional (INST) Zone. The rezoning is to accommodate conversion of the former Circle Square Ranch children's summer camp to a year-round residential addictions recovery and treatment facility for 25 young men, aged 18 and over.

Recommendation
Moved by Councillor Danny Breen that the application be rejected on the basis that the proposed rezoning and development would not be consistent with the City's planning objectives and would be premature by virtue of the site lacking adequate road access and presently being beyond the natural development of the area.

It was suggested and agreed that Chairman, Councillor Hann, meet with the proponent to encourage Provincial Government participation.

a. Proposed Rezoning from Rural Residential Infill (RRI) Zone and Open Space Reserve (OR) Zone to the Rural Residential Infill (RRI) Zone
361-363 Petty Harbour Road, Ward 5

The Committee considered a memorandum dated August 12, 2014 from the Chief Municipal Planner which noted the property owner has submitted an application to rezone the property situated on 361-363 Petty Harbour Road, along the north side of the road between First Pond and Second Pond in the Goulds.

It was noted that there is no sanitary sewer, storm sewer or water main services for this property. Permitting this amendment to the Municipal Plan and the Development Regulations would be precedent setting for further unserviced residential development.

Recommendation
Moved by Councillor Breen; seconded by Councillor Tilley: That the application be rejected on the basis it is contrary to the Municipal Plan's policies which seek to curb sprawl and new unserviced residential development.

b. 465-467 Main Road
Proposed Rezoning from R1 to R2-Condo (Ward 5)
Applicant: Dynamic Engineering

The Committee considered a memorandum dated August 12, 2014 from the Chief Municipal Planner which outlines the application has been submitted to rezone property located at 465-467 Main Road, Goulds, for a thirty (30) townhouse development with a central parking area.

The rezoning adheres to the objectives of the Municipal Plan however, an amendment to the Development Regulations is required. The proposed development would be consistent with the development pattern that currently exists along this portion of Main Road. There are many examples of Commercial, Institutional and Mobile Home Park Zones along Main Road adjacent to the subject property. The Residential Medium Density – Condominium (R2 – Condominium) Zones appears to be appropriate for the area. As a Municipal Plan Amendment is not required, there will be no public hearing.

Recommendation
Moved by Councillor Breen; seconded by Councillor Tilley: That approval be given to the terms of reference for a Land Use Assessment Report and upon subsequent receipt of the report, the application be referred to a public meeting chaired by a member of Council.

Councillor Tom Hann
Chairperson

SJMC2014-08-25/371R
It was decided on motion of Councillor Tilley; seconded by Councillor Collins: That the Planning and Development Standing Committee report of August 12, 2014 be adopted as presented with the exception of No. 1 – Application by Teen Challenge which will be considered under separate cover.

The motion being put was unanimously carried

b. 729 Fowler's Road, Ward 5
Application to Rezone Land to Institutional (INST) Zone and
Proposed Residential Addictions Recovery and Treatment Facility
Applicant: Teen Challenge Canada

The Committee considered a memorandum dated August 15, 2014 from the Chief Municipal Planner noting that Teen Challenge Canada has applied to have property situated at 729 Fowler's Road rezoned to the Institutional (INST) Zone. The rezoning is to accommodate conversion of the former Circle Square Ranch children's summer camp to a year-round residential addictions recovery and treatment facility for 25 young men, aged 18 and over.

Recommendation

Moved by Councillor Danny Breen that the application be rejected on the basis that the proposed rezoning and development would not be consistent with the City's planning objectives and would be premature by virtue of the site lacking adequate road access and presently being beyond the natural development of the area.

It was suggested and agreed that Chairman, Councillor Hann, meet with the proponent to encourage Provincial Government participation.

Development Committee Report – August 19, 2014

The Committee considered the above-noted report.

The following matter was considered by the Development Committee at its meeting held on August19, 2014. A staff memo is attached for Council's information.

Planning & Development File No. CRW1400020
Proposed Crown Land Permission to Occupy for Proposed Access Road
Department of Environment & Conservation File 1034336
Crown Land Referral for 0.84 Hectares
275 CBS Bypass (Ward 5) – Rural (R) Zone

It is the recommendation of the Development Committee that Council approve the subject Crown Land application. Should the applicant be successful in obtaining the Crown Land Permit, a formal development application must be submitted to the City for review and approval prior to the commencement of any development on the site.

Original Signed

David Blackmore, Deputy City Manager
Chair – Development Committee

DB/sf

Attachment

Date: August 21, 2014

To: His Worship the Mayor and Members of Council

From: Dave Blackmore, Chair, Development Committee;
Deputy City Manager; Planning, Development and Engineering

Re: **Planning & Development File No. CRW1400020**
Proposed Crown Land Permission to Occupy for Proposed Access Road
Department of Environment & Conservation File 1034336
Crown Land Referral for 0.84 Hectares
275 CBS Bypass (Ward 5) – Rural (R) Zone

The Provincial Department of Environment and Conservation has referred an application to the City requesting comment for a Crown Land 'Permission to Occupy' regarding the above-referenced property. The applicant intends to use the land to create an access road to the land adjacent, which has been approved for freight storage and laydown area. The property dimensions are 20m x 420m.

Recommendation:

Council approve the subject Crown Land application. Should the applicant be successful in obtaining the Crown Land Permit, a formal development application must be submitted to the City for review and approval prior to the commencement of any development on the site.

(Original Signed)

Dave Blackmore
Chair, Development Committee;
Deputy City Manager- Planning, Development and Engineering

SJMC2014-08-25/372R
It was decided on motion of Councillor Hann; seconded by Councillor Breen: That the Development Committee report of August 12, 2014 be adopted as presented.

The motion being put was unanimously carried

Development Permits List

Council considered as information the following Development Permits List for the period of August 7, 2014 to August 20, 2014:

DEVELOPMENT PERMITS LIST
DEPARTMENT OF PLANNING, DEVELOPMENT AND ENGINEERING
FOR THE PERIOD OF August 7, 2014 to August 20, 2014

Code	Applicant	Application	Location	Ward	Development Officer's Decision	Date
RES		Home Office for Landscaping Business	26 Myrick Place	5	**Approved**	14-08-11
COM	Pinnacle Engineering Ltd	Office Building	18 Hebron Way	1	**Approved**	14-08-11
RES		Building Lot	7 cape Pine Street	5	**Approved**	14-08-11
COM	Regal Realty Limited	Two 5-Storey Condominium Buildings- Phase 1	200-232 Newfoundland Drive	1	**Approved**	14-08-11
RES		Demolition & Rebuild of Dwelling	5 Linegar Avenue	5	**Approved**	14-08-13
RES		Building Lot	1460 Blackhead Road	5	**Approved**	14-08-19
COM	10758 Newfoundland Ltd	Circular Driveway	97 Torbay Road	1	**Approved**	14-08-19
COM	Ratan Holdings Inc	Relocation of Entrance	38-42 Ropewalk Lane	3	**Approved**	14-08-19
RES		Home Office for Banfield's Snow Clearing & Lawn Care Inc.	7 Aldergrove Place	5	**Approved**	14-08-20

* **Code Classification:**
RES - Residential **INST - Institutional**
COM - Commercial **IND - Industrial**
AG - Agriculture
OT - Other

** **This list is issued for information purposes only. Applicants have been advised in writing of the Development Officer's decision and of their right to appeal any decision to the St. John's Local Board of Appeal.**

Gerard Doran
Development Officer
Department of Planning

Building Permits List

Council considered the following Building Permits List:

Building Permits List
Council's August 25, 2014 Regular Meeting

Permits Issued: 2014/08/07 To 2014/08/20

CLASS: COMMERCIAL

575 Newfoundland Dr Co Service Station

653 Topsail Rd	Co	Retail Store
450 Water St	Rn	Service Shop
85a Aberdeen Ave	Ms	Retail Store
10 Elizabeth Ave	Ms	Retail Store
92 Elizabeth Ave	Ms	Club
40 Hebron Way	Sn	Retail Store
25 Hebron Way	Ms	Retail Store
446 Newfoundland Dr	Ms	Eating Establishment
22 O'leary Ave	Ms	Restaurant
16 Stavanger Dr	Ms	Retail Store
673 Topsail Rd	Sn	Mixed Use
421 Torbay Rd	Ms	Retail Store
435 Torbay Rd	Ms	Commercial School
292 Main Rd	Nc	Swimming Pool
134 Water St	Co	Service Shop
59 Elizabeth Ave	Nc	Accessory Building
5 Bates Hill	Ex	Restaurant
27 Mayor Ave	Rn	Commercial School
336 Logy Bay Rd	Rn	Commercial School
430 Topsail Rd, 241 Pizza	Cr	Take-Out Food Service
125 Kelsey Dr	Rn	Office
48 Kenmount Rd/Glamour Secrets	Cr	Retail Store
236 Water St	Rn	Bank
34 Ropewalk Lane - Kfc	Nc	Eating Establishment
5 Springdale St., 7th Seadrill	Rn	Office
136 Crosbie Rd	Rn	Office
45 Hebron Way	Nc	Office
18 Hebron Way	Nc	Office

This Week $ 21,696,528.00

Class: Industrial

This Week $ .00

Class: Government/Institutional

180 Military Rd	Rn	Church

This Week $ 81,000.00

Class: Residential

7 Ann Harvey Pl - Lot 294	Nc	Single Detached & Sub.Apt
320 Bay Bulls Rd	Nc	Fence
1403 Blackhead Rd	Nc	Accessory Building
78 Blackler Ave	Nc	Accessory Building
78 Blackler Ave	Nc	Accessory Building
62 Blackmarsh Rd	Nc	Fence
367 Blackmarsh Rd	Nc	Patio Deck
130 Bonaventure Ave	Nc	Fence
34 Burton St	Nc	Accessory Building
3 Capulet St, Lot 216	Nc	Single Detached Dwelling
126 Cheeseman Dr	Nc	Accessory Building
6 Cherrybark Cres	Nc	Single Detached Dwelling
20 Cherrybark Cres-Lot 216	Nc	Single Detached Dwelling
36 Cherrybark Cres	Nc	Fence

41 Country Grove Pl	Nc	Accessory Building
26 Coventry Way	Nc	Accessory Building
4 Crestview Pl	Nc	Patio Deck
4 Crestview Pl	Nc	Accessory Building
4 Crestview Pl	Nc	Fence
5 Curtis Pl	Nc	Patio Deck
208 Doyle's Rd	Nc	Accessory Building
175 Doyle's Rd	Nc	Single Detached & Sub.Apt
3 Duke St, Lot 241	Nc	Single Detached & Sub.Apt
22 Dunkerry Cres, Lot 279	Nc	Single Detached Dwelling
46 Dunkerry Cres, Lot 267	Nc	Single Detached & Sub.Apt
60 Dunkerry Cres Lot 260	Nc	Single Detached Dwelling
29 Eastbourne Cres	Nc	Accessory Building
121 Edison Pl	Nc	Patio Deck
631 Empire Ave	Nc	Fence
8 Fogo Pl	Nc	Accessory Building
144 Freshwater Rd, Unit 1	Nc	Townhousing
144 Freshwater Rd, Unit 2	Nc	Townhousing
144 Freshwater Rd, Unit 3	Nc	Townhousing
144 Freshwater Rd, Unit 4	Nc	Townhousing
144 Freshwater Rd, Unit 5	Nc	Townhousing
144 Freshwater Rd, Unit 6	Nc	Townhousing
144 Freshwater Rd, Unit 7	Nc	Townhousing
35 Georgina St	Nc	Accessory Building
63 Gleneyre St	Nc	Patio Deck
16 Golf Course Rd	Nc	Swimming Pool
153 Gower St	Nc	Patio Deck
95 Grenfell Ave	Nc	Accessory Building
2 Ironwood Pl	Nc	Fence
29 Jennmar Cres	Nc	Fence
33 Kincaid St	Nc	Patio Deck
32 Lady Anderson St	Nc	Fence
42 Mccrae St	Nc	Fence
5 Meadowbrook Park Rd	Nc	Patio Deck
53 Meighen St	Nc	Fence
14 Mike Adam Pl	Nc	Fence
20 Myrick Pl	Nc	Fence
50 Nautilus St, Lot 160	Nc	Single Detached Dwelling
58 Nautilus St, Lot 159	Nc	Single Detached Dwelling
67 Nautilus St, Lot 148	Nc	Single Detached Dwelling
200-232 Newfoundland Dr	Nc	Condominium
3 Newtown Rd	Nc	Accessory Building
14 Nightingale Rd	Nc	Accessory Building
57 Old Petty Harbour Rd	Nc	Patio Deck
21 Paton St	Nc	Patio Deck
64 Perlin St	Nc	Patio Deck
64 Perlin St	Nc	Fence
20 Picea Lane	Nc	Patio Deck
23 Pole Cres	Nc	Accessory Building
26 Ridgemount St	Nc	Accessory Building
28 Rosalind St	Nc	Fence
46-50 Ryan's Pl	Nc	Single Detached Dwelling
15 St. Shotts Pl	Nc	Accessory Building
19 Sequoia Dr., Lot 317	Nc	Single Detached Dwelling
236 Stavanger Dr, Lot 63	Nc	Single Detached Dwelling
11 Stephano St, Lot 227	Nc	Single Detached Dwelling
17 Stephano St, Lot 224	Nc	Single Detached & Sub.Apt
19 Stephano St, Lot 223	Nc	Single Detached & Sub.Apt
23 Sugar Pine Cres, Lot 265	Nc	Single Detached Dwelling
48 Tree Top Dr	Nc	Swimming Pool
3 Sitka St	Nc	Accessory Building
24 Warbury St	Nc	Patio Deck
8 Waterview Pl., Lot 3.15	Nc	Single Detached Dwelling

25 Cape Pine St	Cr	Subsidiary Apartment
1 Point Verde Pl	Cr	Subsidiary Apartment
2 Cheyne Dr	Ex	Single Detached Dwelling
6 Gil Eannes Dr	Ex	Patio Deck
35 Green Acre Dr	Ex	Single Detached & Sub.Apt
34 Alexander St	Rn	Single Detached Dwelling
196 Bay Bulls Rd	Rn	Single Detached Dwelling
129 Blackmarsh Rd	Rn	Single Detached Dwelling
42 Bristol St	Rn	Fence
11 Cabot St	Rn	Townhousing
1 1/2 Cormack St	Rn	Single Detached Dwelling
6 Gil Eannes Dr	Rn	Swimming Pool
140 Gower St	Rn	Semi-Detached Dwelling
55 Iceland Pl	Rn	Single Detached Dwelling
49 Kenai Cres	Rn	Single Detached Dwelling
73 King's Rd	Rn	Townhousing
32 Mackenzie St	Rn	Single Detached Dwelling
8 Maxse St	Rn	Single Detached Dwelling
51 Nautilus St	Rn	Single Detached Dwelling
12 Nunnery Hill	Rn	Single Detached Dwelling
56 Orlando Pl	Rn	Single Detached Dwelling
20 Peppertree Pl	Rn	Subsidiary Apartment
18 Pilot's Hill	Rn	Townhousing
14 Quidi Vidi Rd	Rn	Single Detached & Sub.Apt
7 Riverview Ave	Rn	Single Detached Dwelling
79 Rotary Dr	Rn	Single Detached Dwelling
75 Shaw St	Rn	Apartment Building
5 Somerset Pl	Rn	Single Detached Dwelling
337 Southside Rd	Rn	Semi-Detached Dwelling
22 York St	Rn	Townhousing
24 York St	Rn	Townhousing
18 Young St	Rn	Townhousing
31 Young St	Rn	Townhousing
39-41 Young St	Rn	Townhousing
42 Bristol St	Sw	Single Detached Dwelling
94 Old Petty Harbour Rd	Sw	Single Detached Dwelling
3 Organ Pl	Sw	Single Detached & Sub.Apt
74 Petty Harbour Rd	Sw	Single Detached Dwelling
553 Southside Rd	Sw	Vacant Land
7 Vaughan Pl	Sw	Single Detached Dwelling

This Week $ 21,835,927.00

Class: Demolition

48 Kenmount Rd-Charm Jewelry	Dm	Retail Store
300 Kenmount Rd	Dm	Other

This Week $ 20,000.00

This Week's Total: $ 43,633,455.00

Repair Permits Issued: 2014/08/07 To 2014/08/20 $ 254,200.00

156 Great Eastern Avenue – your application to expand existing driveway is rejected as to Section 10.10.3(g) of the 1994 Development Regulations.

38 Forest Road – your application for a new driveway is rejected, property must have at least 50% of the frontage as landscaping, mature trees at front of the property are Public Tress and shall be protected from development.

27 New Gower Street – your application for a sign is rejected as to Section 13(b) of the Heritage Area Sign By-Law.

695 Empire Avenue – your application for extension of accessory building is rejected as to Section 8.3.6(2) of the St. John's Development Regulations.

Legend

Co	Change Of Occupancy	Sn	Sign
Cr	Chng Of Occ/Renovtns	Sw	Site Work
Nc	New Construction	Ex	Extension
Rn	Renovations	Dm	Demolition
Ms	Mobile Sign		

YEAR TO DATE COMPARISONS			
August 25, 2014			
TYPE	**2013**	**2014**	**% VARIANCE (+/-)**
Commercial	$66,706,000.00	$96,943,000.00	45
Industrial	$131,000.00	$125,000.00	-5
Government/Institutional	$71,281,000.00	$77,742,000.00	9
Residential	$109,192,000.00	$100,605,000.00	-8
Repairs	$2,958,000.00	$3,333,000.00	13
Housing Units (1 & 2 Family Dwellings)	302	220	
TOTAL	**$250,268,000.00**	**$278,748,000.00**	11

Respectfully Submitted,

Jason Sinyard, P. Eng., MBA
Director of Planning & Development

SJMC2014-08-25/373R
It was decided on motion of Councillor Breen; seconded by Councillor Collins: That the recommendations of the Director of Planning and Development with respect to the following Building Permits list for the period August 7, 2014 to August 20, 2014 be approved.

The motion being put was unanimously carried.

Requisitions, Payrolls and Accounts

Council considered the following Requisitions, Payrolls and Accounts report from the Department of Finance:

Weekly Payment Vouchers
For The
Week Ending August 13, 2014

Payroll

Public Works	**$ 443.257.80**
Bi-Weekly Administration	**$ 832,040.52**
Bi-Weekly Management	**$ 457,710.98**
Bi-Weekly Fire Department	**$ 688,613.79**
Accounts Payable	**$ 4,349,364.52**
Total:	**$ 6,770,987.61**

Weekly Payment Vouchers
For The
Week Ending August 20, 2014

Payroll

Public Works	**$ 416,747.36**
Bi-Weekly Casual	**$ 153,259.31**
Accounts Payable	**$11,668,641.87**

Total: $12,238,648.54

SJMC2014-08-25/374R
It was decided on motion of Councillor Breen; seconded by Councillor Collins: That the following Payrolls and Accounts for the weeks ending August 13th and August 20th, 2014 be approved.

Tenders

Council considered the following tenders and staff's recommended bidders who meet the required specifications and the Public Tendering Act:

- Tender - Bannerman Park Pavilion - Redwood Construction Limited for $163,520.00 + HST.

- Tender - 2014 Water Transmission Main Replacement Program - Allandale Road / Bonaventrue Avenue -Phase 3(Milbanke Street to Prince Philip Drive) - Coady Construction & Excavating Ltd. for $2,616,481.10 (Including HST).

The motion being put was unanimously carried.

SJMC2014-08-25/375R
It was decided on motion of Councillor Breen; seconded by Councillor Collins: That the above-noted tenders be awarded as per staff's recommendations.

The motion being put was unanimously carried.

Memorandum dated August 15, 2014 from City Solicitor re: Taylor's Path

Council considered the above-noted memorandum which recommends approval to acquire an easement which is needed to gain access to other lands for constructing and maintaining a berm.

SJMC2014-08-25/376R
It was decided on motion of Councillor Collins; seconded by Councillor Tilley: That approval be given to acquire an easement at a cost of $2,100 plus legal fees on property located at 21 Taylor's Path.

The motion being put was unanimously carried.

Memorandum dated August 15, 2014 from City Solicitor re: 113 Portugal Cove Road

Council considered the above-noted memorandum which recommends approval to acquire an easement which is needed for a water line in relation to the Water Transmission Line Replacement Project.

SJMC2014-08-25/377R
It was decided on motion of Councillor Davis; seconded by Councillor Galgay: That approval be given to acquire an easement at a cost of $900 plus legal fees on property located at 113 Portugal Cove Road.

The motion being put was unanimously carried.

Memorandum dated August 19, 2014 from City Solicitor re: 23 Warford Road

Council considered the above-noted memorandum which recommends approval to acquire an easement which is needed to gain access to other lands for constructing a maintaining a berm.

SJMC2014-08-25/378R
It was decided on motion of Councillor Collins; seconded by Councillor Hickman: That approval be given to acquire an easement at a cost of $3,475 plus legal fees on property located at 23 Warford Road.

The motion being put was unanimously carried.

Ratification of E-poll re: Rogers Hometown Hockey Event.

Council considered the results of an e-poll wherein it was recommended by the Finance & Administration Committee to enter into a partnership arrangement at a cost not exceeding $15,000. A majority of Council was in agreement.

SJMC2014-08-25/379R
It was decided on motion of Councillor Galgay; seconded by Councillor Davis: That the e-mail poll re: Rogers Hometown Hockey Partnership be ratified.

The motion being put was unanimously carried.

Councillor Galgay

Councillor Galgay brought forward the matter of a greater presence of signs within the City and requested that where they have been erected without appropriate permits, increased and more stringent enforcement along with more timely removal. Council concurred.

Councillor Galgay made reference to a recent fire in the downtown where security personnel was required to crawl under a fence in order to gain access to the building in question. He requested follow up and a report to ensure such properties are accessible.

Councillor Galgay requested the consideration of staff in evaluating the need for a four way stop at the intersection of Cochrane and Gower Street.

Adjournment

There being no further business the meeting adjourned at 5:48 p.m.

_____
MAYOR

_____
CITY CLERK

NOTICES PUBLISHED

Applications which have been advertised in accordance with the requirements of Section 5.5 of the St. John's Development Regulations and which are to be considered for approval by Council at the **Regular Meeting of Council on September 2, 2014**

Ref #	Property Location/ Zone Designation	Ward	Application Details	Floor Area (square metres)	# of Employees (includes the applicant)	# of On-Site Parking Spaces	Written Representations Received	Planning and Development Division Notes
1	411 Stavanger Drive Commercial Regional (CR) Zone	**1**	A Discretionary Use Application has been submitted to the City by Bell Mobility Inc. seeking approval of site design in relation to a telecommunications rooftop site at **411 Stavanger Drive** on Hampton Inn & Suites Hotel. In accordance with the City of St. John's Siting Protocol for Wireless Facilities, the City of St. John's hereby notifies residents in the vicinity of 411 Stavanger Drive of the intention of Bell Mobility Inc. to install an antenna system consisting of: - Antennas flush mounted to the building in a gooseneck style, and finished to match the color of the building.				submissions received **(see attached)**	**The Planning and Development Division recommends approval of the application subject to all applicable City requirements.**
2	10 Factory Lane Commercial Office Hotel (COH) Zone	**2**	A Discretionary Use application has been submitted to the City by Bell Mobility Inc. seeking approval of site design in relation to a telecommunications rooftop site at **10 Factory Lane** on the Fort William Building. In accordance with the City of St. John's Siting Protocol for Wireless Facilities, the City of St. John's hereby notifies residents in the vicinity of 10 Factory Lane of the intention of Bell Mobility Inc. to install an antenna system consisting of: - Antennas mounted to the building façade, and finished to match the color of the building.				submission received **(see attached)**	**The Planning and Development Division recommends approval of the application subject to all applicable City requirements.**

Contd…

Ref #	Property Location/ Zone Designation	Ward	Application Details	Floor Area (square metres)	# of Employees (includes the applicant)	# of On-Site Parking Spaces	Written Representations Received	Planning and Development Division Notes
3	Commercial Regional (CR) Zone	**1**	A Discretionary Use Application has been submitted by MRA Architecture & Design requesting approval to establish and operate a national brand coffee shop with drive-thru, a service station with convenience store and a drive-thru car washing facility located at **5 Hebron Way**. The application satisfies all requirements of Section 7.30 Drive-Thru Facilities of the St. John's Development Regulations and has the required separation distance from a residential zone. The proposed coffee shop with drive-thru will have a total floor area of 174.2 m^2, the service station with convenience store will have a total floor area of 279.0 m^2 and the car washing facility will have a total floor area of 159.6 m^2. On-site parking will be provided.				No submissions received	**The Planning and Development Division recommends approval of the application subject to all applicable City requirements.**

The Office of the City Clerk and the Department of Planning, Development & Engineering, in joint effort, have sent written notification of the applications to property owners and occupants of buildings located within a minimum 150-metre radius of the application sites. Applications have also been advertised in The Telegram newspaper on at least one occasion and applications are also posted on the City's website. Where written representations on an application have been received by the City Clerk's Department, these representations have been included in the agenda for the Regular Meeting of Council.

Jason Sinyard, P. Eng, MBA
Director of Planning and Development

Bell Mobility Tower on Hampton Inn Suites
Gabrielle Scott
to:
dbreen, JSinyard, planning, henry.klain, jbutt, Harris.J, kevinparsons
2014/08/25 10:05 PM
Hide Details
From: Gabrielle Scott [redacted] Sort List...
To: dbreen@stjohns.ca, JSinyard@stjohns.ca, planning@stjohns.ca, [redacted]

Hi,
I am a resident of Clovelly on Hyde Park drive and I am opposed to an Application by Bell Mobility to erect an antenna so close to where we live where there are playgrounds, residences, seniors, and a daycare facility.

I believe it is up to Bell Mobility and Industry Canada to show me it is safe, with up to date research, before this application is approved.

Can you please provide this to me-to us the residents in this area?
Thanks,
Gabrielle Scott

Cell Tower Application
Heather Rowe
to:
Danny Breen, JSinyard, planning, henry.klain, jbutt, Harris.J, kevinparsons
2014/08/25 05:47 PM
Hide Details
From: Heather Rowe [redacted] > Sort List...
To: Danny Breen <dbreen@stjohns.ca>, JSinyard@stjohns.ca, planning@stjohns.ca, [redacted]

Good afternoon,

This is in response to an application by Bell Mobility to install a cell tower on the roof of the Hampton Inn at 411 Stavanger Drive.

I have read a number of research papers that question the safety of these towers so close to residential areas. While I am obviously not expert in the field, I would appreciate it if people who are experts in the field could validate that there would be no harmful effects on the nearby daycare, residences, and playground before this application is approved.

When I built my current home in the Stavanger area, the first thing I did before purchasing the lot was to have NL Power meet me at the site with an emissions reader to ensure that the nearby power station didn't pose a threat to my family's health. I think it is reasonable to expect similar information before allowing this tower to be built.

Thanks in advance,
Heather Rowe

Re: Bell Mobility Antenna Application - Hamtons Hotel

City Clerk and Council to: Majid Abdi 2014/08/22 01:57 PM

Sent by: Elaine Henley

Cc: Planning, Jason Sinyard, Ken O'Brien, Karen Chafe, Maureen Harvey, Lindsay Lyghtle Brushett, Paul Boundridge, Mark Hefferton, Donna L Mullett

Good Afternoon Ms. Abdi:

We acknowledge receipt of your e-mail concerning the above application.

Your concerns have been forwarded to the City's Department of Planning, Development and Engineering for comment.

Elaine Henley
City Clerk

Majid Abdi Office of the City Clerk This is related to BellMob... 2014/08/21 05:50:11 PM

From: Majid Abdi [redacted]
To: "cityclerk@stjohns.ca" <cityclerk@stjohns.ca>
Date: 2014/08/21 05:50 PM
Subject: Bell Mobility Antenna

Office of the City Clerk

This is related to BellMobility's application to install the antenna on Hamptons hotel roof. Thank you for informing us of such application. As the residents of the neighbourhood we we are not aware of the health effects of such antennas and therefore are concerned about this. The city should check with the right authorities to understand the health effects on citizens. We also do not know of the size and impact on the aesthetics of such installation. Therefore we cannot really make any statement on this application unless more info is provided. For instance how could this installation negatively impact the residents in the 150-m radius.

Best regards,

Majid A. Abdi
[redacted] Hyde Park Drive,
St. John's, NL
A1A 5G1

Fw: Application by Bell Mobility to Errect a Cell Antenna at 411 Stavanger Drive (Hampton Inn and Suites)

Gerard Doran to: Agenda 2014/08/27 01:40 PM

History: This message has been replied to.

Gerard Doran
Development Supervisor
Department of Planning, Development and Engineering
City of St. John's
576-8452
576-8625 fax
----- Forwarded by Gerard Doran/CSJ on 2014/08/27 01:39 PM -----

From: Jason Sinyard/CSJ
To: Gerard Doran/CSJ@CSJ
Date: 2014/08/25 01:52 PM
Subject: Fw: Application by Bell Mobility to Errect a Cell Antenna at 411 Stavanger Drive (Hampton Inn and Suites)

Jason

Jason Sinyard, P.Eng., MBA
Director of Planning & Development
City of St. John's

----- Forwarded by Jason Sinyard/CSJ on 2014/08/25 01:51 PM -----

From: Valerie Hynes [redacted]>
To: "dbreen@stjohns.ca" <dbreen@stjohns.ca>, "JSinyard@stjohns.ca" <JSinyard@stjohns.ca>, "planning@stjohns.ca" <planning@stjohns.ca>, [redacted]m>
Date: 2014/08/25 01:46 PM
Subject: RE: Application by Bell Mobility to Errect a Cell Antenna at 411 Stavanger Drive (Hampton Inn and Suites)

Third email with further enclosures attached.

Valerie A. Hynes, LL.B., B.Com.
Partner
Roebothan, McKay & Marshall
P.O. Box 5236
34 Harvey Road, 5th Floor
St. John's, NL A1C 5W1
Telephone: (709) 753-5805
Facsimile: (709) 753-5221
Toll-free: (800) 563-5563

E-mail: vhynes@wrmmlaw.com
Website: www.makethecall.ca

From: Valerie Hynes
Sent: Monday, August 25, 2014 1:35 PM
To: 'dbreen@stjohns.ca'; 'JSinyard@stjohns.ca'; 'planning@stjohns.ca'; [redacted]
Cc: John (johnveitch@nl.rogers.com)
Subject: RE: Application by Bell Mobility to Errect a Cell Antenna at 411 Stavanger Drive (Hampton Inn and Suites)

Further enclosure attached.

Valerie A. Hynes, LL.B., B.Com.
Partner
Roebothan, McKay & Marshall
P.O. Box 5236
34 Harvey Road, 5th Floor
St. John's, NL A1C 5W1
Telephone: (709) 753-5805
Facsimile: (709) 753-5221
Toll-free: (800) 563-5563
E-mail: vhynes@wrmmlaw.com
Website: www.makethecall.ca

From: Valerie Hynes
Sent: Monday, August 25, 2014 1:09 PM
To: 'dbreen@stjohns.ca'; 'JSinyard@stjohns.ca'; 'planning@stjohns.ca'; [redacted]
Cc: John (johnveitch@nl.rogers.com)
Subject: Application by Bell Mobility to Errect a Cell Antenna at 411 Stavanger Drive (Hampton Inn and Suites)

Dear Sir and/or Madam:

I write in my personal capacity as a resident of 29 Veitch Cres. in the City of St. John's, NL and as a mother of three young children ages 4,7 and 10 years old. Bell Mobility has applied for approval to erect a cell phone antenna/tower atop the Hampton Inn and Suites at 411 Stavanger Drive. I live well within 400 metres of this location. My youngest child attends daycare at Bloomsbury Child Care Centre which is 389 Stavanger Drive or 98 metres from this location. My entire family uses Stavanger Drive Playground for recreation, which is adjacent to 389 Stavanger Drive. So as you can imagine, while we didn't receive notice of the Application we are very much interested in the outcome.

Since learning of the Application I have done some research on the topic of cell towers and the harmful effects of radio frequency radiation (RFR) and electromagnetic fields (EMF). It seems that Health Canada and Industry Canada are far behind in their research and have not been conducting independent research on this topic that has been published. I am enclosing some summary information as well. Further, the research available that has been peer reviewed indicates that there are dangers associated with exposure to radiation which emanates from cell towers. I am attaching to this email enclosures of relevant research, including eight reports and studies showing the harmful effects of such exposure. A significant risk appears to exist to humans and particularly young children who are exposed to EMF and RF radiation over prolonged periods of time.

It seems the closer you are to a cell tower the greater the harmful effects are. I do not want a cell tower or antenna placed 98 meters from where my son spends 8-9 hours of his day (daycare) or lives within 400 metres (our home). I am not a scientist and should not be asked to prove these harmful effects. This is complicated science and I do not represent to understand all of what I have read. However, my neighborhood of Clovelly Trails is full of young children and many more concerned parents and we wanted to be protected from environmental harm.

Rogers Mobility already has a Cell Tower on Stavanger Drive that has been there a long time. I would suggest it is little more than 400 metres from my home, but it is within 400 metres from many homes in Clovelly Trails. The combined exposure if this bell Mobility antenna is approved must be over the legal limits for residents?

Bell Mobility, Industry Canada and Health Canada should be able to show me that this cell tower/antenna does not create a risk to my children and family before the location is approved. The research I have enclosed says otherwise and I am very concerned.

I submit that the City of St. John's should do the right thing and turn down this application until further notice and upon receipt of up to date peer reviewed research that there are no harmful effects on children from prolonged exposure to RFR and EMF radiation. I also ask my political representatives, Danny Breen, Kevin Parsons and Jack Harris to help us protect our children.

Please see enclosed.

Sincerely,

Valerie Hynes and John Veitch

Valerie A. Hynes, LL.B., B.Com.
Partner
Roebothan, McKay & Marshall
P.O. Box 5236
34 Harvey Road, 5th Floor
St. John's, NL A1C 5W1
Telephone: (709) 753-5805
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Toll-free: (800) 563-5563
E-mail: vhynes@wrmmlaw.com
Website: www.makethecall.ca


R. Santini. Hearing Report.pdf


Enviromental Health Perspectives.pdf


Science Direct.pdf


Mobile Telecommunications and Health UK.pdf


Hutter et al.pdf

Epidemiologic Evidence Relevant to Radar (Microwave) Effects

John R. Goldsmith

Department of Epidemiology and Health Services Evaluation, Ben-Gurion University of the Negev, Beer Sheva, Israel

Public and occupational exposures to microwave (RF) radiation are of two main types. The first type of exposures are those connected with military and industrial uses and, to some extent, broadcast exposures. It is this type that most of the data cited in this study draw upon. The second type, cellular telephones and their associated broadcast requirements, have raised concerns about current exposures because of their increasingly widespread use. Four types of effects were originally reported in multiple studies: increased spontaneous abortion, shifts in red and white blood cell counts, increased somatic mutation rates in lymphocytes, and increased childhood, testicular, and other cancers. In addition, there is evidence of generalized increased disability rates from a variety of causes in one study and symptoms of sensitivity reactions and lenticular opacity in at least one other. These findings suggest that RF exposures are potentially carcinogenic and have other health effects. Therefore, prudent avoidance of unneeded exposures is recommended as a precautionary measure. Epidemiologic studies of occupational groups such as military users and air traffic controllers should have high priority because their exposures can be reasonably well characterized and the effects reported are suitable for epidemiologic monitoring. Additional community studies are needed. — *Environ Health Perspect* 105(Suppl 6):1579–1587 (1997)

Key words: leukemia epidemiology, brain cancer epidemiology, nonionizing radiation epidemiology, cellular telephones and health, TV and radio broadcast towers, military electronic equipment effects

Introduction

It is widely recognized that radiation exposures such as X-rays, gamma radiation, and ingestion of radioisotopes can produce increases in the incidence of cancer in man and animals, although there is disagreement about dose–response relationships. These types of radiation, because their energy is sufficient to cause ionization, are called ionizing radiation. This is distinguished from nonionizing radiation, which includes ultraviolet (UV), visible light, 50 to 60 cycle (also called extremely low frequency radiation [ELF]), and radiofrequency or microwave (RF) radiation (*1–4*). Conventionally, it was thought that nonionizing radiation was not carcinogenic, even though there has been evidence of skin carcinogenicity from UV radiation for some time (*5*). In the last decade, there has been extensive study and evaluation of ELF following evidence that childhood leukemia increased among children who lived in homes in Denver, Colorado, near power lines and distribution facilities (*6*).

ELF studies have included extensive evaluations of occupational and residential exposures, but there has been considerable difficulty in establishing dose–response relationships or mechanisms (*7*).

Evaluation of RF exposures was conducted primarily by military- and security-oriented government agencies, and earlier studies recently have been reevaluated. Because of the rapid development and use of cellular telephone systems, which involve widespread public exposures, reevaluation of exposure risk becomes urgent. The radiation emanates mainly from handheld devices and from the many broadcast facilities needed to maintain such systems. It is generally agreed that the physical attributes of UV, ELF, and RF exposures are sufficiently different so that separate evaluations of the possible risks of each are justified. Nevertheless, some potential mechanisms of biologic reaction and dose–response relationships among different types of subjects and exposures are common to all three exposures. I discuss the types of epidemiologic evidence with possible relevance to evaluation of RF exposures.

Neoplastic responses, if they do occur, may have a long latency period. If one waits for cancer to occur, exposed populations have increased risk for the duration of the latency period. Even if cancer risks cannot yet be unequivocally demonstrated, some measure of protection should be taken as early as possible because it may take some time to determine the definitive relationship between RF and cancer.

A second reason for urgency with respect to taking protective measures is that, because of rapid increases in the numbers of persons exposed to increased RF exposures in connection with cellular telephone use, some biologic basis is needed as a guide for prudent protective behavior. It is possible that a system of biologic indicators can be found that would allow identification of increased cancer risk. This possibility seems worth exploring.

Originally, heating of tissues by RF was considered the basic mechanism through which radiation affected exposed individuals. Therefore, existing protective principles and practices are built around avoidance of the thermal effects of such exposures. There has been increasing concern that this approach may not be adequate and with this in mind, the International Conference on Non-Thermal Effects of Microwave Radiation was convened in November 1996. The proceedings of this conference are being prepared for publication.

With regard to epidemiologic evidence of radiation, a report published in January 1995 (*8*) focused primarily on military, industrial, and broadcast exposures. This study was supplemented by the review of Rothman et al. (*9*) in May 1996, Grayson's

This paper is based on a presentation at the International Conference on Radiation and Health held 3–7 November 1996 in Beer Sheva, Israel. Abstracts of these papers were previously published in *Public Health Reviews* 24(3–4):205–431 (1996). Manuscript received at *EHP* 11 March 1997; accepted 2 June 1997.

Address correspondence to Dr. J.R. Goldsmith, Department of Epidemiology and Health Services Evaluation, Faculty of Health Sciences, Ben-Gurion University of the Negev, P.O. Box 653, Beer Sheva, Israel 84120. Telephone: 972 7 6400876. Fax: 972 7 6277342. E-mail: gjohn@bgumail.bgu.ac.il

Abbreviations used: AE, aviation electrician's mate(s); ALL, acute lymphatic leukemia; ANLL, acute nonlymphatic leukemia; AT, aviation electronics technician(s); ELF, extremely low frequency radiation (50–60 cycles); FM, frequency modulation; FSHSS, Foreign Service Health Status Study (Lilienfeld Report); FT, fire control technician(s); O/E, observed to expected; OR, odds ratio(s); RD, radarmen; RF, radiofrequency or microwave; RM, radiomen; RR, relative risk; SIR, standardized incidence ratios; TV, television; U.S. EPA, U.S. Environmental Protection Agency; UV, ultraviolet.

report on brain cancer in U.S. Air Force personnel (*10*), and by three published community studies of cancers possibly associated with proximity to broadcast facilities (*11–13*).

This review is intended only to update previous assessments of cancer risk from RF radiation. Like the earlier report (*8*), it is not intended to be a comprehensive review or a balanced report of all possibly relevant findings. Also, there is no attempt to critically evaluate these findings.

Finally, Swedish government agency assessments of ELF effects led to prudent avoidance policies (*14,15*), which may be applicable to presently available knowledge about RF. This appears to be an attractive alternative to waiting until the data are convincing enough to achieve agreement on new and enforceable standards.

Possible Effects of Radiofrequency Radiation

Evidence up to 1994 as reviewed in Goldsmith (*8*) indicates the likelihood of the following effects from exposure to RF radiation in certain populations: reproductive effects such as increased spontaneous abortion, changes in blood counts, increased somatic mutation, and increased incidence of childhood and other cancers. Other findings have suggested effects such as cataract, nonspecific disabilities, and symptoms in sensitive persons (headache, ocular problems, fatigue, dizziness, memory impairment, and sleep difficulties).

The Evidence

Reproductive Outcomes

Study of Physiotherapists. Ouellet-Hellstrom and Stewart (*16*) reported on a study of female physiotherapists who used either RF or short-wave apparatus and were queried about the outcome of pregnancies. The frequency generated by short-wave equipment was 27.12 MHz and by microwave equipment was 915 MHz and 2450 MHz.

The survey was conducted among female members of the American Physiotherapy Association in the United States. Of 11,598 respondents who reported having at least one pregnancy, 6684 (57.6%) reported using short-wave or microwave diathermy. These 6684 women reported 14,989 pregnancies, of which 1791 ended in miscarriages, called case pregnancies. Of the remaining pregnancies with sufficient data, 12,949 were classified as control pregnancies. Exposure was defined as occurring if the woman had been using one of the physiotherapy modes during the first trimester of pregnancy and during the preceding 6 months. Cases were matched to controls by mother's age at time of conception and by the number of years elapsed between the pregnancy and the date of filling out the questionnaire. A number of confounders were included, among which was prior fetal loss.

Of the case and control mothers, 11.9 and 9.5%, respectively, were using microwaves during the pregnancy; the odds ratio (OR) for spontaneous abortion increased as the number of exposures increased from 5 or less to 20 or more per month. The trend was significant whether or not prior fetal loss had occurred. For women exposed to short-wave radiation, 22.3% lost their baby prior to the 7th week of pregnancy, whereas the figure for unexposed women was 24.4%. Of the microwave-exposed women, 47.7% had miscarriages prior to the 7th week of pregnancy compared to 14.5% of nonexposed women.

Measured values of stray emissions near waist level ranged from 0.04 to 16.58 mW/cm^2 for electric fields with short-wave units, and these units produced magnetic fields of 0.09 to 8.32 mW/cm. For microwave diathermy the electric field leakage was from 0.08 to 1.20 mW. Leakage measured 15 cm from the source was as high as 15 mW/cm^2. Duration of the therapist exposures was usually only a few minutes per treatment.

Moscow Staff Study. The exposures of U.S. embassy personnel in Moscow are described in Goldsmith (*8*), based on Lilienfeld at al. (*17*) (Table 1). Studies were done among Moscow embassy employees, staff dependents, and other personnel and compared with similar groups in other Eastern European embassies.

The study known as the Foreign Service Health Status Study (FSHSS) or Lilienfeld Report (*17*) was designed to compare the experience of employees in the Moscow embassy with those of similar employees in other Eastern European embassies on the assumption that the latter were not exposed to RF radiation. There was some evidence that these employees were exposed as well, but the contract officer dismissed the possibility as being based on hearsay. In a meeting with the State Department Contract Officer Dr. Pollack about the submitted draft of the Lilienfeld Report, G. Jacobson noted that the reference to a potential infertility effect in the sutdy might be inappropriate because the experimental work was done at very high doses and there are no controlled human studies (*18*). According to the minutes of the meeting, "this clause will be modified to reflect the very speculative nature of the reports, but the FSHSS data will be presented as is" (*17*).

The final report makes no reference to any possible impact on infertility, but it does present some data (Table 1) that show more frequent complications among Moscow workers compared to those from other embassies.

Thus, we are left with higher rates of complications of pregnancy at the Moscow embassy for a problem that originally was thought to affect fertility. It seems most likely related to or actually to be spontaneous abortion.

Systematic Alterations in Red or White Blood Cell Counts

When radar was first identified as a health risk, Daily (*19*) reported a statistically significant increase in immature red blood cells among workers exposed to radar. These studies were summarized by Follis et al. (*20*). Early studies at Lockheed Aircraft (Burbank, CA) by Barron et al. (*21*) were later dismissed on the grounds "that there was variation in the interpretations by a laboratory technician" (*22*). Bach found that rats exposed at 13 mW/cm had changes in blood cell counts (*23*).

Goldoni (*24,25*) compared the hematological findings in 25 male air traffic control technicians exposed to radar with those for 10 electronic technicians whose work was distant from a microwave

Table 1. Complications of pregnancy, childbirth, and puerperium (*ICD-8*, Codes 630–678) among women employees in the Foreign Service Health Status Study (*17*).

	Ever[a,b]		After index[a,c]		
	Moscow	Comparison	Moscow	Comparison	*p*
	19 (6%)	19 (3%)	11 (3.5%)	9 (1.3%)	0.04
SMBR	1.7	0.67			

Abbreviations: *ICD, International Classification of Diseases, 8th Revision*; SMBR, standardized morbidity ratio. [a]Refers to the initial tours of duty during which exposures occurred. [b]Whether the condition occurred at any time; [c]Whether the condition occurred after the initial tour of duty.

source. The radar was in the range of 1250 to 1350 MHz, with a strength varying from 10 to 20 μW. Radar-exposed workers had significantly lower levels of leukocytes and red cells than workers distant from the microwave source. In a follow-up study of 49 radar-exposed technicians, thrombocyte and leukocyte counts decreased significantly but stayed within normal limits (*25*).

A hematologic study of Moscow foreign service workers was submitted to the U.S. government on 7 October 1976 by Tonascia and Tonascia (*26*). They found, on comparing the data for Moscow-based employees with that from foreign service exams conducted in the United States, that

> The differences between the two groups with respect to every parameter except monocytes (% and counts) are highly statistically significant ($p<0.001$) after appropriate transformation. Specifically the Moscow group had a higher mean hematocrit, the Moscow group had a lower neutrophil percentage, but higher percentages for the other three cell types (lymphocytes, eosinophils, and monocytes). The white cell counts are strikingly higher in the Moscow group.

Several statistically significant changes occurred over time in the Moscow group; specifically, mean hematocrit increased and a 3-fold increase in monocyte count occurred. Neutrophil percentages fell and then rose; the reverse pattern was observed for the lymphocytes (*26*).

Vukelic et al. (*27*) studied the effects of RF radiation on 72 physiotherapists and physiatrists in Croatia. They found a significantly positive correlation between length of service and white cell count, and an association of years of exposure with low red cell count.

Tornqvist et al. (*28*) studied 706 power station workers at 3-year intervals and found that the white blood cell counts were decreased slightly because of exposures to magnetic fields.

Evidence of Mutational Activity in Human Incubated White Blood Cells

The initial examination of Moscow embassy workers, conducted when it became known they were being irradiated by Soviet transmitters, was done to study the possible effects of radiation on chromosomes in blood samples (*26*). Beginning in February 1966, 3 to 4 years after the microwave irradiation was first detected, samples were taken for chromosomal analysis. Twenty spreads were scored per sample; results are shown in Table 2 (*18*).

Overexposed Air Traffic Controllers. Garaj-Vrohac et al. (*29*) examined six men accidentally exposed while repairing microwave devices used for air traffic control in Zagreb. These subjects usually worked alternate days in a microwave field of 1250 to 1350 MHz with power density of 10 μg/W to 20 mW/cm^2. The accidental exposure was greater than these figures but by how much is not known. The results of chromosome aberration analysis during 1984 to 1990 showed no increase in chromosomal abnormalities compared to the control. Table 3 shows results for the accidentally exposed subjects.

Two things are clear from this experience: Microwave irradiation can produce genotoxic effects, and recovery can occur with a half-time of about 15 weeks when about one-third of the spreads show aberrations. Both chromosomal and chromatid reactions occur.

It is conventional wisdom to assume that nonionizing radiation cannot produce such changes, but there is evidence that this view is incorrect. For example, cattle in the field exposed *in vivo* near a large military RF emitter in Skrunda, Latvia (*30*), showed more positive micronuclei test results than unexposed cattle. Bovine lymphocytes *in vitro* respond to microwave exposure using the same test (*31*). Genotoxic changes are found in Chinese hamster cells *in vitro* (thymidine incorporation and chromosomal and chromatid changes) (*32*) and in human lymphocytes *in vitro* (*33*) using micronuclei tests.

A series of studies from Croatia and Italy have also demonstrated that radar exposures are mutagenic both *in vivo* and *in vitro* (*29,32–35*).

In a paper about the effect of RF radiation on the cell genome (*32*), the investigators used cultured Chinese hamster cells exposed to 7.7 GHz at power densities of 30 mW/cm^2 for 15, 30, and 60 min. Using tritiated thymidine and autoradiography, the incorporation of thymidine into DNA after a 4-hr incubation decreased in a stepwise manner according to the length of exposure and almost completely recovered

Table 2. Results of tests for chromosomal changes in metaphase spreads of lymphocytes cultured *in vitro* among selected Moscow embassy employees.

Mutagenic level[a]	Designator	Subjects, no
5	Extreme	0
4	Severe	6
3.5	Intermediate	5
3	Moderate	7
2.5	Intermediate	5
2	Questionable	5
1	Normal	6
Growth failure		2

[a]Grading of mutagenic processes and clinical interpretations of these findings were provided by Dr. G. Jacobson (George Washington University Medical School, Washington, DC), who wrote: "Patients who repeat at level 3 or higher should not reproduce until 6 months after somatic levels have returned to 2 or 1. Patients at level 4 should be withdrawn from mutagenic exposure and monitored each month until less than 3 is obtained on two consecutive samples" (*18*). Dr. Jacobson also wrote, "I feel impelled, as in past reports, to emphasize the necessity to study serial samples on the same individual and when possible to study the subject prior to exposure" (*18*). Apparently, no such follow-up or serial studies were done.

Table 3. Type and percentage of chromosomal aberrations after accidental exposure to high-power density pulsed RF radiation.

Subject no	Date	Chromatid breaks	Chromosome breaks	Acentrics	Dicentrics	Rings	Total aberrations, %
1	18/11/1990	2	1	2	1	–	3.0
	5/12/1990	–	1	1	1	–	1.5
2	6/12/1990	–	4	8	4	1	8.5
	25/02/1991	4	1	3	1	–	4.5
3	6/12/1990		3	10	3	–	8.5
	26/02/1991	4	3	3	2	–	6.0
4	20/12/1990	–	1	2		1	2.0
	16/01/1991	–	3	5	1	1	5.0
5	11/12/1990	–	6	48	9	3	33.0
	14/02/1991	1	4	31	6	2	22.0
	13/03/1991	4	7	18	6	1	18.0
	17/04/1991	6	6	6	[a]	[a]	9.5
	22/05/1991	3	4	6	2	–	7.5
	2/06/1991	1	–	5	1	–	3.5
6	20/12/1990	–	4	2	1	–	3.5
	30/01/1991	–	2	1	–	1	2.0

[a]Chromatid interchange 1.

in 24 hr. In addition, chromosomal aberrations increased stepwise according to the duration of exposure. The background percent abnormal metaphase was 1.7%; with a 15-min exposure it increased to 4.8%, with 30 min, 6.3%, and with 60 min, 8.9%. Garaj-Vhrovac et al. (*33*) report on the relationship between colony-forming ability, chromosome aberrations, and the incidence of micronuclei in V79 Chinese hamster cells exposed to RF radiation. These authors were able to demonstrate damage to cell genomes and changes in chromosome structure based on observations of structural chromosomal aberrations and micronuclei tests. The exposures used were 7.7 GHz and 30 mW for 15, 30, and 60 min. The structural changes replicated the changes observed in their initial paper. The micronuclei/1000 cells were background 0.016, and with a 15-min exposure, 0.043; 30 min, 0.050, and 60 min, 0.073. The authors believe that these results cannot be explained on the basis of cell heating.

In a third paper, Garaj-Vhrovac et al. (*34*) used human lymphocytes instead of Chinese hamster cells, and a correlation was shown between micronuclei percentages and specific chromosomal aberrations (acentric fragments and dicentric chromosomes). Temperature was held constant, and an additional level of power density of 0.5 mW/cm^2 was added. Its use led to a 2.7% aberration and 1.4% micronuclei compared to control levels of 1.5 and 0.9%.

In another paper the authors also traced the occurrence and repair of chromosomal aberrations in personnel repairing aircraft traffic control radar (*29*). The signal was ordinarily in the range of 1250 to 1350 MHz with a field strength varying from 10 μW to 20 mW/cm^2. Under ordinary exposure circumstances no long-term trend in chromosomal abnormalities was found. The six overexposed personnel were accidentally exposed to much higher levels in connection with work on equipment repair.

d'Ambrosio et al. (*35*) also found genotoxic effects of amplitude modified microwaves on human lymphocytes in culture. The signal was 9 GHz, modulated at 50 Hz with a specific absorption ratio of 90 mW/g and the exposure was for 10 min.

These findings are epidemiologically important because of the need for biological indicators of exposure and also because of the theory that somatic cell mutations lead to increased risk for cancer. The usefulness of such tests as a biological monitor seems clear from the data and the findings of excess numbers of mutations among chromosomes in the blood of the group exposed at the Moscow embassy (*17*).

In a prospective study of persons with stable mutations, Hagmar et al. (*36*) found an increase in lymphoreticular cancer, but no such effect was seen in persons with transient changes or changes of a chromatid type. A recent review by Akiyama et al. (*37*) summarizes the present understanding of the prognostic importance of somatic cell mutation.

Table 4. Age-adjusted cancer and leukemia annual incidence rates for males and females in census tracts with broadcasting towers compared to those without such towers (Honolulu, Hawaii, 1979–1983) and compared to statewide rates per 100,000 (1978–1981).

Area	Males		Females	
	Incidence	SIR[a]	Incidence	SIR[a]
All site cancer				
Tracts with towers	439.6 (488)[b]	1.45*	368.6 (417)	1.27*
Tracts without towers	318.0 (135)	1.05	246.8 (103)	0.85
Statewide	341.2 (5468)	–	272.4 (4658)	–
Leukemia				
Tracts with towers	15.2 (15)	1.58	7.6 (8)	1.45
Tracts without towers	2.4 (1)	0.27	5.0 (2)	0.97
Statewide	9.4 (183)	–	5.3 (90)	–

*$p < 0.01$. [a]Standardized for age. [b]Numbers of cases in parentheses. Statewide data are based on the Surveillance, Epidemiology, and End Results Program Report 1973–1981 (*39*). Original incidence data given by Goldoni (*21*) for 5 years.

Cancer in Children and Others

Study of Broadcast Facilities and Adjacent Populations in Hawaii. A unique opportunity to study the cancer incidence in the vicinity of radio broadcasting towers occurred in Honolulu, Hawaii. This situation existed in part because the hills surrounding Honolulu are a nature preserve, so the radio towers are located in many of the populated census tracts of the city. The study includes cancer incidence data for 1978 to 1981.

Two State Health Department officals used the State Cancer Registry (*38*) to compare the cancer incidence of nine census tracts that included broadcast towers with two demographically similar tracts with no towers (*39*). The U.S. Environmental Protection Agency (U.S. EPA) measured RF radiation at 21 locations and reported that public exposures at 12 of the locations exceeded currently recommended limits. At two outdoor sites, exposures were greater than 1000 μW/cm^2, but at distances greater than 100 to 150 feet from the towers, the exposure levels generally were below 100 μW/cm^2. U.S. EPA officials stated that RF radiation in Honolulu did not pose an immediate risk to the public but officials did not comment on long-term risk. They suggested that further studies be done by the Federal Communications Commission.

The data for all cancer incidence rates and for leukemia overall for males and females, adjusted for age, are shown in Table 4. If the data are adjusted by race rather than by age, the standardized incidence ratio (SIR) for total cancer, both sexes, in tracts without towers is 1.07 compared with 1.88 in tracts with towers, the latter being significantly elevated. For leukemia, the SIR is 0.59 for tracts without broadcasting towers and 2.08 for tracts with broadcasting towers.

The Childhood Leukemia Cluster on the Waianae Coast, Hawaii. In 1985, a pediatric oncologist informed the Hawaii Department of Health that he had seen an unusual number of children with leukemia in the small communities of the Waianae coast. This situation was confirmed by the Hawaii Cancer Registry in 1986 (*40*). In 1990 the department conducted a more detailed investigation and a case–control study. A case was defined as a child under 15 years of age diagnosed with acute leukemia between 1977 and 1990 who had spent at least 25% of his or her lifetime in the area before diagnosis. Fourteen cases met this definition, of which twelve were permanent residents and two had spent 2 to 3 days a week in the area. Based on the state's cancer registry, the number of cases to be expected was about one every 2 years or about seven in 14 years. Seven of the cases occurred during the 3 years 1982 to 1984. After 1985, case incidence returned to expected levels—one case every 2 years (*40*).

Among the seven cases identified from 1982 to 1984, five were acute nonlymphocytic leukemia (ANLL), whereas statewide, three of four cases were acute lymphocytic leukemia (ALL). Six of seven cases were girls; childhood leukemia appears to be

somewhat more common in boys. Four of the girls were between 9 and 12 years of age, whereas the peak onset for childhood leukemia is around 3 years of age.

In the case–control study of 14 cases and 56 matched controls of the same sex born within 6 months of the cases studied, no statistically significant risk factors were defined. There were, however, elevated OR for other cases of cancer in the family (OR = 3.4 with 95% CI of 0.70–16.41) and for having ever resided within 2.2 miles of the Lualualei Naval Broadcast Facility and its two low frequency radio towers (OR 2.2; 95% CI of 0.65–7.56).

The authors suggest that improper storage of oil may have been associated with risk of benzene exposure, a known adult leukemogen. No adequate environmental measurements were available for radiation or benzene exposure. Some measurements of electric or magnetic fields were made by the U.S. EPA in 1990, but the measurements were made primarily along roads and not in areas where children lived and played. Nine of the fourteen cases were of Hawaiian or part-Hawaiian ethnic origin, and there is some evidence that Hawaiians and Maoris of New Zealand have lower rates of ALL and higher rates of ANLL than other ethnic groups.

The authors concluded that "...closeness to the low frequency radio towers at Lualualei Naval Station may have a weak association with leukemia, even though it is not statistically significant. This cannot be considered proof that anything emanating from the station actually caused the leukemia" (*40*).

North Sydney Study. Hocking et al. (*11*) reported on cancer incidence and mortality in the proximity of television (TV) towers; cancer incidence and mortality for the 1972 to 1990 period for nine municipalities in North Sydney, Australia, were collected. Three municipalities were closer to the TV broadcasting facilities than the other six, and hence, exposed to more RF radiation. The calculated power density in the more exposed areas ranged from 8 to 0.2 $\mu W/cm^2$ at a 4-km radius. At a distance of 12 km, power density was 0.02 $\mu W/cm^2$. They found that for all ages, there was little difference in incidence of brain cancer. For leukemia, however, the incidence rate ratio for adults was 1.24 (95% CI 1.09–1.40), whereas for children it was 1.58 (95% CI 1.07–2.34), with a mortality rate ratio of 2.32 (95% CI 1.35–4.01). The authors were unsuccessful in identifying confounders to explain these results.

The signals emitted by the TV towers were 100 kW video amplitude modulated and 10 kW audio frequency modulated on carrier frequencies from 63 to 215 MHz. The authors had no prior knowledge of a possible cluster of leukemia cases near the towers.

United Kingdom Studies. Dolk et al. (*12*) reported on leukemia incidence near the Sutton Coldfield radio and TV transmitters for the years 1974 to 1986. In addition, they studied adult leukemia incidence near 20 high power TV/frequency modulation (FM) transmitters in Great Britain (*13*). The Sutton Coldfield study examined data within a 10-km radius in 10 bands of increasing distance. The innermost area was within 2 km of the transmitter; adult leukemia relative risk (RR) was 1.83 (95% CI 1.22–2.74). Actually, one case lived within 0.5 km when 0.11 km could have been expected on the basis of cancer registry experience and the numbers of person-years of observation. While this results in an RR of 9, emphasizing location of a single case is likely to represent a poorly defined range of risk (Figure 1). There was a significant decline in risk with increased distance ($p < 0.001$) from the transmitters. Expected numbers of leukemias in the 10-km zones near transmitters were calculated on the basis of national rates stratified by 5-year age groups, socioeconomic deprivation quintile, and region.

In a second Dolk et al. (*13*) study the same procedures were used to evaluate risks surrounding 20 other broadcast facilities in the UK for the same period; 3305 cases were identified, with an overall observed-to-expected (O/E) ratio of 1.03 (95% CI 1.0–1.07). Decline in risk with distance was significant for all sites combined. Results in this study were similar to those of the Sutton Coldfield study (*12*). There was no significant excess risk for persons living within 2 km of the transmitters and excess risk was not greater than 15% in any distance band up to 10 km. However, the decline in risk for adult leukemia with distance from the transmitters was significant ($p < 0.05$). Eight of the transmitters broadcast FM and three TV at power equivalent to transmission in the Sutton Coldfield study (*12*). One of the transmitters, Crystal Palace, was located in an unusually densely populated area and appeared to be associated with almost half the cases of leukemia. In the band between 2 and 3 km from the transmitter the adult leukemia O/E ratio was 1.33. Figure 1 shows some of these gradients for the Sutton Coldfield transmitters and for two other groups of stations, one with greater power than the other.

Rothman et al. (*9*) tabulated studies that might relate leukemia to occupational or recreational exposures to RF radiation and studies that related such exposures to brain malignancies. The risk ratios for leukemia were > 1.0 for 19 studies and ≤ 1 for 7. For brain tumors the RR was > 1 for 9 studies, and ≤ 1 for 4.

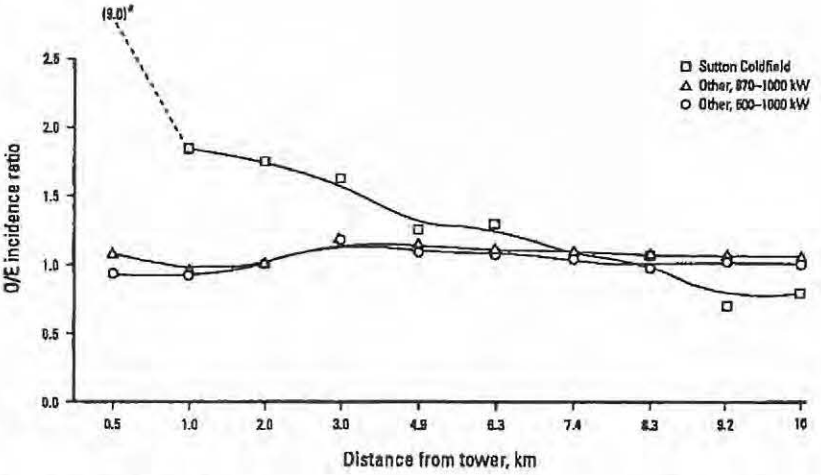

Figure 1. The O/E leukemia incidence ratio by distance from TV and FM broadcast towers. The trends are shown for Sutton Coldfield and for two subsets of other such facilities in the United Kingdom for adults more than 15 years of age for the years 1974 to 1986. One subset is for facilities broadcasting TV in the range of 870 to 1000 kW and the second includes those with power from 500 to 1000 kW. *The O/E incidence ratio of 9.0 is based on a single case. Based on Dolk et al. (*12,13*).

Grayson (*10*) reported on brain cancer among U.S. Air Force personnel, and found that rank (socioeconomic factor) was the most important predictor. When this was taken into account, nonionizing radiation exposure was more important than ionizing radiation and microwave exposures more significant that low frequency exposures. The positive association for military rank had an OR of 3.30 (95% CI 1.99–5.45) for senior officers. For ionizing radiation, the association is negative. The military-rank-adjusted OR is significantly elevated for RF: 1.38 (95% CI 1.01–1.90), but not for ELF: 1.28 (CI 0.95–1.74).

Another study of military personnel and radiation exposures was that by Szmigielski (*41*), who examined cancer by site among Polish military personnel during the period 1970 to 1989. He found a relationship between exposures to high frequency (RF radiation) and cancer morbidity. About 3700 of the approximately 128,000 personnel were classified as exposed and data were tabulated for 12 types of cancer and four age groups. The overall cancer morbidity for exposed personnel was 119.1/100,000 per year compared on an age-adjusted basis to 57.6 in the nonexposed group. The greatest O/E ratios were found for chronic myelocytic leukemia, 13.9; myeloblastic leukemia, 8.62; and non-Hodgkin's lymphoma, 5.82.

A cluster of six cases of testicular cancer among traffic policemen using microwave generators suggests that microwave exposures can cause cancer of the testicle (*42*). Other epidemiologic studies of exposed military personnel point in the same direction (*43,44*).

Lin et al. (*45*) collected data on brain cancer deaths among white males for the state of Maryland, and examined occupations stated on the death certificates Included were 951 brain tumors, of which 370 were glioblastomas, 149 astrocytomas, and 432 had unspecified histology.

Fifty glioma and astrocytoma deaths among workers in occupations with a high probability of electrical exposures were matched by age with a sample of the population by age from the 1979 census. The expected number of such occupations in the general population was about one-third of that observed (18/50) for cases. A case reference study showed that the occupational category of electric or electronic engineer and technician had three times the number of cancer cases as the referent population (18 vs 6; $p < 0.05$). When the specified occupations were ranked by definite, probable, or possible exposures to electromagnetic fields, the OR for astrocytoma and glioma were 2.15, 1.95, and 1.44, respectively.

Garland et al. (*46*) studied leukemia among occupational groups with potential electromagnetic field exposure in the U.S. Navy. Because they studied personnel who were hospitalized while on active duty, the study cannot include personnel with leukemia of substantial latency or those who were not hospitalized. In fact, one occupational group, electrician's mate(s), showed consistent excess of risk for leukemia.

Follow-up Study of 40,000 Korean War Naval Personnel. In the Robinette et al. (*47*) study, naval personnel were divided into occupational groups with low and high exposures by the occupational designator for the personnel. Within these two catagories were three occupational classes, shown in Table 5.

Table 5 shows the occupational groups and numbers of cases. Table 6 gives rates for all deaths (per 1000) during the follow-up period of 1950 to 1974: rates for deaths attributable to disease, malignant disease, and malignancy of the lymphatic and hematopoietic systems. Death rates for the group with the highest exposure, aviation electronics technician(s) (AT), are significantly higher than those for the remaining men for all deaths, disease-related deaths, deaths from malignancy, and deaths from malignancy of the lymphatic and hematopoietic systems. Although it was true that this group had a higher mean age at onset of the follow-up study (23.4 years) than the average of the whole group (21.3) this mean age was younger than the average for aviation electrician's mate(s) AE (24.7), a category that showed no increase in deaths from any malignancy or from other diseases. The authors adjusted for age, but in doing so combined the AT group with the fire control technician(s) (FT) group, which had a low malignancy rate. These two groups, which were about the same size, had 10 and 1 cases of lymphopoeitic or hematological malignancies, respectively. For this population, compensated disability by body system is shown in Table 7 for the two high-exposure groups compared to the remainder of the population Both numbers and crude rates are given as well as the expected number of cases for the more exposed group based on the data for the remainder.

Additional Studies of Cancer in Children and Others. Among the many tabulations from the Lilienfeld report (*18*), those for data about leukemia are shown in Table 8, based on data excerpted from the Lilienfeld report by Goldsmith (*8*). Although the numbers are small, there is significant excess for child dependents in both Moscow and other embassies, as well as an excess for employees and dependents in both locations. Estimated exposures at the Moscow embassy were from 5 to 18 $\mu W/cm^2$.

Table 5. U.S. Naval personnel by occupational category during the Korean War and deaths by cause group, 1950 to 1974.

	Low exposure			High exposure		
	RM	RD	AE	ET	FT	AT
Number of persons	9253	10,116	1412	13,078	3298	3733
Total deaths	296	308	61	441	144	198
From disease	161	165	22	199	81	77
From malignant disease	39	47	8	65	16	27
From malignancy of the lymphatic and hematopoietic systems	6	14	0	18	1	10

Abbreviations: ET, electronics technician(s); RD, radioman; RM, radarman. Data based on Robinette et al. (*47*).

Table 6. U.S. Naval personnel by occupational category during the Korean War and crude death rates per 1000 by cause group, 1950 to 1974.

	Low exposure			High exposure		
	RM	RD	AE	ET	FT	AT
Number of persons	9253	10,116	1412	13,078	3298	3733
Total death rates	32.0	30.4	43.2	33.7	43.7	53.0
From disease	17.4	16.3	15.6	15.2	24.6*	20.62*
From malignant disease	4.21	4.65	5.66	4.97	4.85	7.23*
From malignancy of the lymphatic and hematopoietic systems	0.65	1.38	0.00	1.38	0.3	2.68*

*Significantly increased, $p < 0.05$ compared to less-exposed groups. Data based on Robinette et al. (*47*). For occupational class definitions see Table 5 and text.

Table 7. Number of U.S. Naval personnel receiving Veterans Administration compensation in 1976, by diagnostic group, for two high-exposure groups (FT and AT) relative to the low-exposure groups exposed during the Korean War.

Diagnostic group	FT and AT		All others		FT and AT, expected no
	No	Rate/1000	No	Rate/1000	
Musculoskeletal	119*	16.9	403	11.90	83.7
Special sense organs	42	6.0	152	4.49	31.6
Systematic conditions	5*	0.7	7	0.20	1.45
Respiratory	51*	7.3	171	5.05	35.5
Cardiovascular	47*	6.7	142	4.19	29.5
Digestive	55	7.8	229	6.76	47.6
Genitourinary	19	2.7	99	2.92	20.6
Hemic, lymphatic	3	0.4	10	0.30	2.08
Skin	58	8.2	227	6.70	47.1
Endocrine	11	1.6	46	1.36	9.55
Neurologic	16	2.3	54	1.60	11.2
Nerves	3	0.4	41	1.21	8.5
Epilepsies	0	–	16	0.47	3.32
Mental conditions	46	6.5	198	5.85	41.1
Other	2	0.3	19	0.56	3.95
Total diagnoses	477**	67.84	–	53.61	376.94
Total populations	7031		33,859		

*Significantly increased, $p<0.05$; **significant, $p<0.01$. Data based on Robinette et al. (*44*).

Table 8. Leukemia among U.S. embassy employees and child dependents in Moscow and other Eastern European embassies.

Population	Moscow embassy		Other embassies		Total O/E
	Observed	Expected	Observed	Expected	
Employees	2	0.8	3	1.7	5/2.5
Child dependents	2	0.5*	3	0.7*	5/1.2*
Total	4	1.3*	6	2.4*	10/3.7*

*Significantly elevated O/E ratio, $p<0.05$. Based on table in Goldsmith (*8*).

Evidence of Other Health Effects

Lenticular Changes. Toncheva et al. (*48*) studied 87 persons working with radar and 150 eye-matched controls. The radar workers were divided into five risk groups according to frequencies of microwave exposure (200 KHz to 26 GHz) and power density (8 μW to 300 mW/cm^2).

They found three specific radiation cataracts in persons working with extremely high microwave exposure. Lens changes were associated with level of exposure in different risk groups. Changes such as opacities and posterior polar defects are criteria for microwave exposure.

Nonspecific Disability. In their study of Korean War Veterans, Robinette et al. (*47*) obtained data for disability by body system in 1976. As noted in a previous analysis (*8*), the AT workers, those presumed to have received the most radiation exposures, were combined with the lesser-exposed FT to make what was designated the high-exposure group.

In the ten categories in Table 7 (categories with five or fewer cancer cases are not included) the high (FT+AT) group is higher than the remaining groups, with lower exposures in nine of ten body systems (significant by sign test at $p<0.05$).

The overall disability rate of 67.8/1000 is significantly greater than 43.1 by Poisson criteria. As is apparent from the combination of the two highest exposure job categories and the nature of the job classification procedure as described by the investigators, this analysis probably underestimates the effects of exposure.

Nonspecific Neurological and Sensitivity Reactions. Silverman (*49*) noted some nonspecific reactions to RF radiation, and a more recent review (*50*) brings these findings up to date. More research is needed to better define these reactions.

Interpretations

Available data suggest that RF radiation be considered a carcinogenic risk, a position already taken in an internal U.S. EPA document (*51*) in 1990 when there was much less evidence of the potential harmfulness of RF radiation.

Except for the Moscow staff, which includes both workers and dependents, most of the exposures studied are relevant to occupation. The most relevant to cases of community exposure risks today are those involving populations living near broadcast facilities. Cellular telephone users have not been exposed in definable numbers for a long enough time period for an adequate study to be made of cancer incidence.

However, interpretations must take into account the report of the Repacholi et al. study (*52*) of lymphoma-prone mice, who showed a doubling of the incidence of lymphoma over an 18-month period when exposed to modulated radiation similar to far-field cellular telephone exposures. This initial finding of experimental evidence of cancer from cellular-telephonelike exposures emphasizes the importance of examining epidemiologic evidence of such effects. Possibly the most suitable source for such data would be the more detailed study of exposures of military personnel or air traffic controllers who received definable exposures and have undergone a sufficient period of follow-up. Evaluation of such nonspecific symtoms as headache, sleep disturbances, and unfavorable reproductive outcomes of populations living near broadcast facilities should have priority for community studies.

The evidence may or may not justify more restrictive regulation of occupational exposure; for community exposures, however, the evidence justifies prudent avoidance (*14,15*). The concept has been presented by a group of Swedish government agencies in response to the evidence concerning ELF exposures. The plan is basically voluntary and stresses education about risks and economic analysis of uncertain risks and the possible costs of their avoidance.

Included among the actions to take under the rubric of prudent avoidance is epidemiologic monitoring (*53*), a system of standardized health status measurements of presumably reversible effects, which can, if unfavorable trends are discerned, become the basis for higher levels of population protection. The availability of a number of potentially reversible biologic responses makes this an unusually attractive possibility.

A second type of action is to provide realistic procedures to minimize the exposures. Shielding the head and face from exposures to the antennae of hand-held cellular telephones, and guidelines for keeping an adequate distance between broadcasting sources and civilian populations, are clearly indicated.

Further work is needed on the possibility of carcinogenicity in experimental systems of RF exposures. These systems should be separate from evaluations of

ELF, which does not appear to have the same set of effects.

This review casts some doubt on efforts to distinguish ionizing from nonionizing radiation with respect to their health effects. It also raises doubt about the protective role of regulations based solely on the thermal effects of RF radiation, which is the basis for current standards.

There seems to be some evidence from the Moscow study and community studies in the vicinity of large FM and TV broadcasting facilities that exposures as low as 2 $\mu W/cm^2$ may have long-term health effects.

A comprehensive and critical review of the epidemiologic data available on health risks from RF exposure should be carried out and the reasonable measures for avoidance of the identified risks should be described and evaluated.

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Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations

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Occup. Environ. Med. 2006;63;307-313
doi:10.1136/oem.2005.020784

ORIGINAL ARTICLE

Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations

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Occup Environ Med 2006;63:307–313. doi: 10.1136/oem.2005.020784

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Accepted 11 November 2005

Background: The erection of mobile telephone base stations in inhabited areas has raised concerns about possible health effects caused by emitted microwaves.
Methods: In a cross-sectional study of randomly selected inhabitants living in urban and rural areas for more than one year near to 10 selected base stations, 365 subjects were investigated. Several cognitive tests were performed, and wellbeing and sleep quality were assessed. Field strength of high-frequency electromagnetic fields (HF-EMF) was measured in the bedrooms of 336 households.
Results: Total HF-EMF and exposure related to mobile telecommunication were far below recommended levels (max. 4.1 mW/m^2). Distance from antennae was 24–600 m in the rural area and 20–250 m in the urban area. Average power density was slightly higher in the rural area (0.05 mW/m^2) than in the urban area (0.02 mW/m^2). Despite the influence of confounding variables, including fear of adverse effects from exposure to HF-EMF from the base station, there was a significant relation of some symptoms to measured power density; this was highest for headaches. Perceptual speed increased, while accuracy decreased insignificantly with increasing exposure levels. There was no significant effect on sleep quality.
Conclusion: Despite very low exposure to HF-EMF, effects on wellbeing and performance cannot be ruled out, as shown by recently obtained experimental results; however, mechanisms of action at these low levels are unknown.

Hand-held cellular telephones were introduced in the early 1980s. Due to the relatively high microwave exposure for users while they are on the telephone, the potential health effects of mobile phones have been studied in recent years. However, exposure to the much lower emissions from mobile phone base stations has been neglected. There have been only two observational pilot investigations,[1–2] and one experimental study.[3]

The World Health Organisation (WHO)[4] has recently recommended investigating the effects of exposure to emissions from mobile phone base stations to address public concerns.

It has often been argued that if there are detrimental long term effects from high-frequency electromagnetic fields (HF-EMF) as transmitted by mobile phone base stations, then such effects should have been found near powerful radio and television transmitters. This argument is invalid as: (1) there are very few studies on effects from radio and TV transmitters, ecological and cluster studies on cancer,[5–10] and studies on sleep and other endpoints;[11–12] (2) the results of these studies are compatible with the assumption of a moderately elevated risk; and (3) emissions from base stations differ substantially from those of other sources of HF-EMF.

There are numerous reports from physicians that base stations are associated with a number of health symptoms in neighbours. However, these symptoms might be due to fear about negative effects. Nevertheless there is evidence that long term, low level exposure to HF-EMF may result in a number of symptoms (for example, headaches, fatigue, sleep disorders, memory impairments),[13] attributed as microwave sickness syndrome.[14]

This study investigated the relation between exposure from mobile telecommunication and other sources of HF-EMFs and the associations between exposure and symptoms.

METHODS

Selection of base stations

The study covers urban as well as rural areas in Austria. The city of Vienna was selected as the urban area while villages in Carinthia represented the rural areas. Two network providers were each asked to identify about five base stations within both regions that fulfilled the following requirements:

- The antenna must have been operating for at least two years
- There had been no protests by neighbours against the base station
- There was no other base station nearby (this could only be achieved in rural areas)
- Transmission was preferably only in the 900 MHz band.

Twenty one base stations were specified, from which 10 were selected for the study based on inspection of the local conditions (population density, other sources of exposure).

Selection of study area and participants

Data from the 10 selected antenna locations, including the antenna diagram, were provided by the network companies. In order to ensure a sufficient gradient of exposure, these data were used to define the study area around the selected base station. The investigation was carried out by trained students and a medical technical assistant in Carinthia and

Abbreviations: ANCOVA, analysis of covariance; BCCH, broadcast channel; CI, confidence interval; GSM, global system for mobile telecommunication; HF-EMF, high-frequency electromagnetic fields; MHz, megahertz; POR, prevalence odds ratio; SAR, specific (energy) absorption rate; SD, standard deviation; TDMA, time division multiple access; WHO, World Health Organisation

Table 1 Demographic characteristics of subjects by exposure category

	Exposure category (mW/m²)			
	<0.1	0.1–0.5	>0.5	p value
Age	45 (SD 16)	40 (SD 14)	44 (SD 15)	0.390
Females	60%	56%	55%	0.839
Years of residence	19 (SD 16)	17 (SD 13)	20 (SD 16)	0.403
Hours at home	10 (SD 3)	10 (SD 4)	10 (SD 3)	0.412
Employed	56%	60%	61%	0.639
Urban residence	58%	42%	49%	0.171
Education > 12 y	42%	38%	40%	0.784
Mobile phone use	75%	77%	79%	0.662

p value from Kruskal-Wallis or χ^2 test

Vienna. Based on power calculations, the projected number was 36 subjects for each of the 10 locations.

In Vienna, households were randomly selected from telephone register entries. Subjects were contacted by telephone. If after three attempts no contact could be achieved, the next entry in the telephone list was chosen. Subjects were told that the relationship between environmental factors and health would be investigated. They had to be older than 18 years, have been living in their present house for at least one year, and been staying there for a minimum of eight hours a day on average. Refusal was slightly above 40% and mainly due to time constraints. On acceptance of participation an appointment was made for a visit. In Carinthia the procedure was different because no clear relation of address to study area could be ensured (houses are not always numbered consecutively). Therefore a random selection of houses based on the site plan was performed. Investigators contacted subjects directly in their homes. In the case of acceptance, either an appointment for the investigation was made or it was carried out immediately. Rate of refusal was somewhat lower than in the urban area (32%). On contact, gender, age, and duration of residence in their present house (eligibility criteria) were registered. Non-participants were insignificantly more frequently males (47% *v* 41%) and significantly younger (40 *v* 44 years), and had a significantly shorter time living in their present house (13 *v* 16 years).

Data collection and measurements

All investigations were done in the homes of the subjects using a laptop computer. Performance tests as well as questionnaires were presented along with instructions on the screen. Handling was so simple that after a short introduction all subjects were able to fulfil the tasks without further assistance by the investigators. The investigation consisted of the following:

- Sociodemographic data, sources of EMF exposure within the household, regular use of mobile telephones.
- Evaluation of environmental quality, subjective scaling of the impact different environmental factors could have on the health of the subjects. Among the items listed were traffic noise, particulate matter, and mobile phone base station. Assumed impact was rated on a five point scale from 0 = not at all, to 4 = very strong impact.
- Subjective scaling of symptoms (Zerssen scale).[15] Symptoms were rated on a four point scale from 0 = not at all, to 3 = strong. Symptoms of special interest were headaches, symptoms of exhaustion, and circulatory symptoms (see table 4). For analysis, ratings were dichotomised (0/1–3).
- Investigation of sleeping problems (Pittsburgh sleeping scale).[16] Problems falling asleep and staying asleep were rated by the participants on a frequency scale ranging from never to more than 3 days a week. The global index is

Table 2 Exposure categories and results of analysis of covariance for tests of cognitive performance

Test	Exposure category (mW/m²)			p value
	<0.1	0.1–0.5	>0.5	
Memory				
Immediate memory*	5.2 (1.4)	5.6 (1.4)	5.9 (1.5)	0.166
Short term memory (1 min)†	29.1 (4.3)	29.5 (4.1)	29.3 (3.9)	0.254
Short term memory (3 min)†	33.9 (2.9)	33.1 (3.1)	34.0 (1.9)	0.761
Short term memory (15 min)†	33.4 (2.9)	33.6 (2.4)	33.7 (2.0)	0.885
d' (1 min)‡	0.97 (0.43)	0.58 (0.42)	0.86 (0.41)	0.737
d' (5 min)‡	1.54 (0.39)	1.48 (0.62)	1.52 (0.52)	0.579
d' (15 min)‡	1.56 (0.39)	1.54 (0.32)	1.52 (0.27)	0.198
ln β (1 min)§	−0.34 (0.45)	−0.19 (0.32)	−0.29 (0.39)	0.335
ln β (5 min)§	−1.09 (0.58)	−1.11 (0.72)	−1.04 (0.54)	0.605
ln β (15 min)§	−1.36 (0.53)	−1.21 (0.52)	−1.47 (0.53)	0.095
Perceptual speed				
Speed score (sec)	4.3 (0.9)	4.9 (1.1)	5.6 (1.0)	0.063
Items solved (max. 3)	4.6 (2.4)	4.1 (2.3)	4.1 (2.5)	0.147
Choice reaction task				
Reaction time (msec)	582 (217)	511 (139)	585 (264)	0.465

Results expressed as means (SD)
p values for exposure factor via sheets
*Highest number of correctly reproduced digits
†Number of correctly identified items (sum of correct detections (from 20) and correct rejections (from 20 distraction items))
‡Estimate from signal detection analysis
§Natural logarithm of detection bias beta

computed as the sum of seven sub-scales (see table 5) with each component scored 0 to 3 (higher score indicates greater problems).

- Cognitive performance.
  - Memory tasks consisted of a short term memory test using 1–10 digit numbers that had to be reproduced immediately after presentation. The score was defined as the highest number of digits correctly reproduced. The assessment of medium term memory was based on 20 simple everyday objects in silhouette drawings presented together for 30 seconds on the screen. After 1, 5, and 15 minutes these items together with 20 distraction items (different for the three tests) were presented in random sequence, one at a time, and the subjects had to decide whether or not the picture was among those presented. Each response was followed by immediate feedback. After each test all objects were again presented for 15 seconds. The score was defined as the number of correct responses. In addition, d-prime and response bias (beta) from signal detection analysis were computed (d-prime is the normalised distance between the signal and noise answer distributions, the higher the d-prime, the less likely is confusion between target and distraction items; beta measures the bias to respond "yes" whether it is a target or distraction item).
  - The choice reaction task consisted of a random sequence of squares of three different colours (red, green, and yellow) appearing at random locations on the screen. Subjects had to react as fast as possible by pressing a specified button for each colour. The score was defined as the average correct reaction time across 25 trials.
  - Perceptual speed was tested by presenting two series of 10 letters ("meaningless words") that differed at exactly one position. Eight of these double series were presented in random sequence. Subjects had to find the differing letter under time constraints (maximum 6 seconds) and place a cursor below it. These position varied between the 3rd and 7th letters. Score was defined as the average time to achieve the correct solution. In addition, the number of items solved within the time window was computed.

After completion of the questionnaires and tests, dates were arranged for exposure measurements. Measurements of high frequency EMFs were done by a specialist from a certified centre in Vienna (TGM). A biconic field probe (PBA 10200, ARC Seibersdorf) was used connected to a spectrum analyser (FSP, Rhode & Schwarz). Measurements were performed in the bedroom (this being typically the only place in the house where people consistently spend many hours a day). As exposure may vary at this location, in addition to the sum of power densities across all mobile phone frequencies, the maximum exposure from the base station was computed based on measurements of broadcast channels. Broadcast channels (BCCH) operate all the time at maximum power with all time slots occupied. Hence multiplication of measurements of BCCH by the ratio of the sum of the power of all channels to that of the BCCH results in maximum possible exposure level, while the sum of BCCH measurements gives the minimum. The former is the result of all channels operating at maximum power with all time slots occupied, while the latter occurs if no traffic channel is active.

Distance from the antenna was calculated based on the coordinates of the measurement location and the base station. It ranged between 24 m and 600 m in rural areas and between 20 m and 250 m in urban areas. The smaller range in the latter was due to the vicinity of other base stations and the shadowing effect of high buildings.

Subjects

In total, 365 subjects were investigated (185 in Vienna and 180 in Carinthia). In some cases EMF measurements were not possible due to the absence of the inhabitants at the arranged date. Therefore, only data from 336 subjects could finally be evaluated.

Subjects were between 18 and 91 years of age (mean 44, SD 16 years). Fifty nine per cent were female. Average duration of residence in the house was 19 (SD 16) years, and subjects stayed for 10 (SD 5) hours a day in the immediate neighbourhood. Overall, six subjects occupied the place only after erection of the base station. All subjects slept normally at home.

Statistical analysis

Statistical evaluation of exposure from the base stations was done by analysis of covariance (ANCOVA) for components of the Pittsburgh Sleeping Scale and performance measurements, and by logistic regression analysis for subjective symptoms based on the following procedure. First the maximal power density estimates from base station frequencies were classified into three groups: $\leq$0.1 mW/m^2 (approximately up to median), 0.1–0.5 mW/m^2 (between median and 3rd quartile), and >0.5 mW/m^2. Originally it was planned to define four exposure categories based on quartiles. However, it turned out that the level of exposure was too low for the two lowest exposure categories to be meaningfully discriminated and consequently these categories were combined. Average exposure levels were 0.01 mW/m^2, 0.23 mW/m^2, and 1.3 mW/m^2, respectively. Exposure level, area (rural *v* urban), and interaction were included as fixed factors, age, sex, regular use of a mobile telephone, and the subjective rating of negative consequences of the base station on health were used as covariables. Normality was assessed by Kolmogorov–Smirnov tests using Lilliefors p values, homogeneity of variance by Levene's tests. For all analyses the model with separate slopes was first tested. If none of the interactions with fix factors were significant at the 10% level, the model with homogenous slopes was computed. In addition, homogeneity of variance–covariance matrices of covariables and dependent variables across groups was tested by Box M tests. Unconditional logistic regression was performed using the same covariables. For all tests a p value below 0.05 was considered significant. No correction for multiple testing was applied.

RESULTS

Table 1 gives an overview of features of participants across exposure categories. Although none of the variables reached statistical significance, the somewhat higher proportion of subjects from the urban area in the lowest exposure category should be noted.

Exposure to high frequency EMFs was generally low and ranged from 0.0002 to 1.4 mW/m^2 for all frequencies between 80 MHz and 2 GHz; the greater portion of that exposure was from mobile telecommunications (geometric mean 73%), which was between 0.00001 and 1.4 mW/m^2. Maximum levels were between 0.00002 and 4.1 mW/m^2. Overall 5% of the estimated maximum exposure levels were above 1 mW/m^2. Average exposure levels were slightly higher in the rural area (0.05*/7.6 mW/m^2) than in the urban area (0.02*/7.1 mW/m^2).

Most subjects expressed no strong concerns about adverse health effects of the base station. In the urban and rural test areas, 65% and 61% respectively stated no concerns at all.

Table 3 Detailed results of analysis of covariance for speed score of perceptual speed as a dependent variable

Source of variation		df	MSQ	F value	p value
Corrected Model	Combined	4	94 980	19 721	0 000
	Concerns about base station	1	2 618	0 529	0 333
	Age	1	216 467	77 648	0 000
	Sex	1	0 028	0 010	0 920
	Use of mobile phone	1	0 803	0 288	0 592
Main effects	Combined	3	28 562	10 245	0 000
	Area (rural/urban)	1	69 948	25 090	0 000
	GSM exposure	2	7 669	2 023	0 061
Interaction		2	0 036	0 001	0 999

Factors and covariables are shown in the column "source of variation"
df degrees of freedom, MSQ mean sum of squares

Table 2 gives an overview of results from ANCOVA on the different tests of cognitive performance for the exposure factor only; table 3 shows the full results for the test of perceptual speed. For perceptual speed a tendency for faster reaction in the higher exposure category was found. Omitting the three insignificant covariates from analysis resulted in a significant ($p = 0.009$) main effect for exposure. Logistic regression with the median chosen as a cut-off point was statistically significant. The estimated risk of a value below the median speed score relative to the lowest exposure category was 0.73 (95% CI 0.33 to 1.58) for the second and 0.42 (95% CI 0.18 to 0.98) for the third exposure categories. Accuracy of perceptual speed indicated by number of correct reactions showed the opposite effect, although not

Table 4 Relative risk estimates of subjective symptoms of primary interest for categories of exposure to microwaves from base stations in the bedroom against lowest exposure category

Symptom	Exposure category (mW/m²)	% with symptom	Relative risk*	95% CI	p value
Headaches	<0 1†	61	1 00		0 017
	0 1–0 5	66	1 86	0 82–2 99	
	>0 5	79	3 06	1 22–7 67	
Vertigo	<0 1†	17	1 00		0 306
	0 1–0 5	27	1 27	0 50–3 20	
	>0 5	32	1 54	0 68–3 50	
Palpitations	<0 1†	26	1 00		0 444
	0 1–0 5	32	1 06	0 45–2 47	
	>0 5	38	1 37	0 61–3 11	
Tremor	<0 1†	12	1 00		0 002
	0 1–0 5	9	0 68	0 19–2 41	
	>0 5	26	2 32	0 96–5 67	
Hot flashes	<0 1†	32	1 00		0 727
	0 1–0 5	26	0 90	0 39–2 09	
	>0 5	26	0 87	0 37–2 03	
Sweating	<0 1 †	34	1 00		0 456
	0 1–0 5	38	1 05	0 47–2 32	
	>0 5	40	1 35	0 61–3 97	
Cold hands or feet	<0 1†	40	1 00		0 019
	0 1–0 5	46	1 03	0 40–2 63	
	>0 5	62	2 57	1 18–5 57	
Loss of appetite	<0 1†	13	1 00		0 069
	0 1–0 5	17	1 23	0 48–3 57	
	>0 5	24	2 40	0 93–6 18	
Loss of energy	<0 1†	63	1 00		0 886
	0 1–0 5	63	1 22	0 61–2 84	
	>0 5	58	1 05	0 49–2 27	
Exhaustion	<0 1†	44	1 00		0 698
	0 1–0 5	41	0 77	0 36–2 02	
	>0 5	51	2 07	0 87–4 89	
Tiredness	<0 1†	64	1 00		0 259
	0 1–0 5	89	1 97	0 54–6 10	
	>0 5	88	1 92	0 62–5 96	
Difficulties to concentrate	<0 1†	60	1 00		0 035
	0 1–0 5	64	1 32	0 61–2 86	
	>0 5	76	2 55	1 07–6 08	
Feeling stressed	<0 1†	44	1 00		0 430
	0 1–0 5	51	1 67	0 76–3 65	
	>0 5	40	0 74	0 33–1 63	
Urge to sleep	<0 1†	47	1 00		0 680
	0 1–0 5	58	1 21	0 56–2 61	
	>0 5	51	1 17	0 53–2 54	

p values for exposure factor are shown
*Adjusted for age, sex, region, regular use of mobile telephone, and fear of adverse effects of the base station
†Reference category

Table 3 Results of analysis of covariance for components and global score of the Pittsburgh Sleep Quality Index and logistic regression for "poor sleepers" (global score > 5)

Component	Exposure category (nW/m²)			
	<0.1	0.1–0.5	>0.5	p value
Subjective sleep quality	0.71 (0.79)	0.60 (0.77)	1.00 (0.89)	0.360
Sleep latency	0.76 (0.93)	0.74 (0.95)	0.94 (0.98)	0.295
Sleep duration	1.06 (0.98)	1.14 (1.03)	1.21 (1.09)	0.504
Habitual sleep efficiency	0.54 (0.92)	0.70 (0.98)	0.74 (1.16)	0.061
Sleep disturbances	0.92 (0.56)	0.91 (0.66)	0.91 (0.62)	0.338
Daytime dysfunction	0.66 (0.75)	0.54 (0.70)	0.82 (0.90)	0.099
Sleep medication	0.10 (0.45)	0.17 (0.71)	0.21 (0.73)	0.216
Global score	4.74 (3.52)	4.78 (3.66)	5.85 (4.21)	0.282
Poor sleepers (%)	35%	31%	41%	0.225

Results expressed as mean (SD)
p values for exposure factor are shown

to a significant extent. Hence there is some speed–accuracy trade-off.

For subjective symptoms of primary interest, effects of exposure from the base station are shown in table 4. Many symptoms were more frequent at higher exposure levels; headaches, cold hands or feet, and difficulties in concentrating, and to a lesser degree, tremor, loss of appetite, and feelings of exhaustion showed increased prevalence after correction for confounding factors.

Results for sleep quality are shown in table 5. Two subscales (sleep efficiency and daytime dysfunction) showed indications of poorer sleep at higher exposure categories. A highly significant effect of concerns about negative health implications of the base station was found for overall sleep quality (global score), with poorer quality in those concerned. As expected, age also had a significant influence. Without considering the influence of the subjects' concerns about the base station, the effect of exposure would have been statistically significant. Logistic regression analysis with the median score as a cut-off point showed no pronounced effect of exposure ($p = 0.131$).

DISCUSSION

Mobile phone base stations easily comply with current guidelines (for example, ICNIRP (International Commission on Non-Ionizing Radiation Protection) guidelines).[17] Our measurements show that exposure of the public in the vicinity of base stations is indeed low. However, considering all HF-EMF exposures above 80 MHz, mobile telecommunication is responsible for an average of 73% of these exposures. This is consistent with representative measurements in Sweden[18] and the UK.[19]

The present study was conducted to provide answers to intriguing methodological problems of the epidemiological investigation of base stations.

How is it possible to attribute effects to a specific source of HF-EMF? In study areas, exposure from other sources of HF-EMFs was from distant transmitters and therefore more or less constant. Effects from these exposures will therefore not confound the effects of base stations. As study areas were selected to guarantee a gradient of exposures from base stations, the only relevant contribution to the variance of HF-EMF exposure was from base stations (93% of variance).

Another problem is the time variation of exposure, depending on the number of connected calls (due to the TDMA (time division multiple access) mode of the GSM system). Of course the best approach would be a long term measurement of exposure, or to use personal "dosimeters". However, there are no such dosimeters available and long term measurements are not feasible due to economic restrictions as well as problems of compliance. A possible solution is to conduct a short term measurement at a location where subjects are assumed to spend considerable periods of time (we chose the bedroom), analyse the spectrum of exposure, and select the broadcast channels that are operating at constant maximum power. Based on these measurements a range of exposures can be computed. We analysed data based on broad categories so that this categorisation leads to almost equal allocation whether "average", minimum, or maximum exposure estimation is used. A broad categorisation was used because of other sources of variance of exposure (like movements of subjects) that cannot be accounted for.

A further problem is the dynamic development of telecommunication networks. For the present study, we selected base stations emitting with unchanged features for

Table 4 Results of analysis of covariance (ANCOVA) for global score of the Pittsburgh Sleep Quality Index as dependent variable

Source of variation		df	MSQ	F value	p value
Covariates	Combined	4	233.497	11.770	0.000
	Concerns about base station	1	422.038	17.545	0.000
	Age	1	661.076	24.059	0.000
	Sex	1	97.265	3.172	0.076
	Use of mobile phone	1	63.176	2.299	0.130
Main effects	Combined	3	42.571	1.549	0.202
	Area (rural/urban)	1	57.795	2.103	0.148
	GSM exposure	2	36.959	1.272	0.282
Interaction		2	59.404	2.136	0.121

Factors are controlled for are shown in the column "source of variation"
df, degrees of freedom; MSQ, mean sum of squares

Main messages

- Exposure from mobile phone base stations is orders of magnitude below current guideline levels.
- Self-reported symptoms like headache and difficulties in concentrating show an association with microwave exposure from base stations, not attributable to subjects' fear of health effects from these sources.
- Other symptoms, like sleeping problems, seem to be more due to fear of adverse health effects than actual exposure.

Policy implications

- Despite very low emissions from mobile phone base stations, more research concerning the effects of radiofrequency radiation from base stations is indicated.
- As a precautionary measure, siting of base stations should be such as to minimise exposure of neighbours.

at least two years. Furthermore, it was important that no other base station was nearby (which, however, could only be achieved in rural areas).

Because of the much higher exposure during telephoning compared to exposure from base stations, it is hardly conceivable that such small additional exposure could have an effect. However, these exposures have fundamentally different features. Exposure from the base station will be at low, but more or less constant levels for many hours a day, especially during the night. Comparing these levels is inappropriate if long term effects actually exist. If, for example, a subject is using a GSM mobile with a specific energy absorption rate (SAR) of 0.04 W/kg[20] for 10 minutes, this would be roughly equivalent to a 15 day exposure from a base station at an exposure level of 1 mW/m^2 if the principle of time–dose reciprocity is valid. However, it is not known whether this principle holds for exposure to HF-EMFs.

There is no a priori argument why the much lower levels from base stations should have no effect in the presence of widespread use of mobile telephones. Possible confounding by using a mobile has been considered in this study.

Generally, ratings were higher for most symptoms in subjects expressing concerns about health effects from the base station. Subjects who experience health problems might search for an explanation in their environment and blame the base station; another explanation would be that subjects with concerns are more anxious and also tend to give a more negative view of their body functions, or that some people generally give quite negative answers. Irrespective of these explanations there seem to be effects of exposure that occur independently of the fear of the subjects about the base station affecting their health. This is the case for headaches, cold hands or feet, and difficulties in concentrating, for example. These effects were robust with respect to additional potential confounders (for example, for headaches, inclusion of an indicator of socioeconomic status—years of education and type of occupation—slightly increased the risk estimator for exposure and decreased the p value from 0.017 to 0.016; inclusion of years of living in the present home and overall rating of environmental quality slightly increased the p value to 0.019; inclusion of hours staying at home did not change effect estimates at all). Interestingly these symptoms as well as some others that tended to be increased at higher exposure levels belong to those attributed to the microwave sickness syndrome. However, no clear relationship has been found for sleeping problems that are often mentioned in the public debate. The effect on sleep is dominated by concerns of the subjects of negative health effects of the base station. Many factors are known to influence sleep quality. Only a few could be considered in this study. Since some aspects of sleep quality, like sleep efficiency, showed a tendency for being affected by exposure, future studies should attempt to eliminate additional confounders.

Concerning symptom reporting there are a number of personality factors for which an association has been established. Among these are state anxiety, depression, and negative affectivity. The main question concerning this range of factors is whether they might act as confounders. In discussions of the microwave sickness syndrome, depression has also been mentioned among the possible effects of exposure; confounding is therefore conceivable. Sleep quality, unspecific symptoms, depression, affectivity, and other personality characteristics are connected with each other in a network of relationships such that a clear understanding of the possible long term effects of exposure may only be determined by longitudinal studies.

No influence of the subjects' fear about negative effects of the base station was found for cognitive performance. There was a small but significant reduction of reaction time for perceptional speed at increased exposure levels. It is interesting to note that such facilitating effects have also been reported during short term experimental exposures [9 22] and a study in teenagers using mobile phones.[21] On the other hand, a study[4] in children chronically exposed to emissions from a radio tower reported increased reaction times and reduced performance in cognitive tasks. We found a reduction of reaction time in adults, but an insignificant decrease of accuracy. Recognition in the medium term memory task showed a reasonable and increasing differentiation between target and distraction items and a decreasing response bias over repeated tests, but there was no indication of an influence of exposure from the base station. Furthermore, cognitive performance varies with factors that have not been controlled or considered in this study. Indices of socioeconomic status, however, were tested and did not modify effect size of base station exposure.

The results of this study indicate that effects of very low but long lasting exposures to emissions from mobile telephone base stations on wellbeing and health cannot be ruled out. Whether the observed association with subjective symptoms after prolonged exposure leads to manifest illness remains to be studied.

ACKNOWLEDGEMENTS

This study was supported by the Scientific Medical Funds of the Mayor of the City of Vienna and the Government of the County of Carinthia. The assistance of Dr M LMathiaschitz, Mrs G Pridnig, and Mrs B Piegler is gratefully acknowledged.

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Competing interests: none

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Mobile Telecommunications and Health

Summary of the ECOLOG study for T-Mobile, 2000

Mobile Telecommunications and Health. Read the full ECOLOG report.

Appendix E, research database listing (in German)

In 2000, the same year the Stewart Report was commissioned by the UK Government, T-Mobil in Germany (the parent company of T-Mobile) commissioned a highly-rated independent research institute, the ECOLOG Institute in Hanover, to review all relevant available research to date with regard to the health risks from mobile telecommunications.

This review of over 220 peer-reviewed and published papers found strong indications for the **cancer-initiating** and **cancer-promoting** effects of high frequency electromagnetic fields used by mobile telephone technology. Experiments on cell cultures at power flux densities much lower than the guidelines, yielded strong indications for **genotoxic effects** of these fields, like single and double stranded DNA breaks and damage to chromosomes. The findings that high frequency electromagnetic fields influence **cell transformation, cell growth promotion** and **cell communication** also point on a **carcinogenic potential** of the fields used for mobile telephony. The study also found **teratogenic effects** (birth deformities) and loss of **fertility** in animal studies. Moreover, disruptions of other cellular processes, like the **synthesis of proteins** and the control of **cell functions by enzymes**, have been demonstrated.

Numerous experiments on humans as well as on animals proved effects on the central nervous system, which reach from **neuro-chemical effects** to modifications of the brain potentials and impairments of certain brain functions. Loss of **memory and cognitive function**, for instance, have been demonstrated by animal experiments. From experiments with volunteers, who were exposed to the fields of mobile telephones, there is clear evidence for influences on certain cognitive functions. Possible risks for the brain also arise from an increased **permeability of the blood-brain barrier** to potentially harmful substances, observed in several experiments on animals exposed to mobile telephone fields.

The ECOLOG report also found indications for disruptions of the **endocrine and the immune system.** High frequency electromagnetic fields cause **stress reactions**, showing up in an increased production of stress hormones in experimental animals and they lead to a reduction of the concentration of the hormone **melatonin** in the blood of exposed animals and humans. Melatonin has a central control function for the hormone system and the diurnal biological rhythms and it is able to retard the development of certain tumours.

A common observation in many of the studies was the importance of pulse modulation. Pulse modulated fields seemed to have a stronger effect than continuous fields and that in some cases, it was the pulse of a certain frequency which triggered the reaction, and absence of pulse, or pulse of a different frequency, led to less significant effects or no effect at all.

In sum, the ECOLOG report came to dramatically different conclusions than the Stewart Report and called for an immediate downward regulation of the power flux density that should be allowed by the guidelines, by a factor of 1,000.

Translator's Note

In my translation from the German, I have consistently applied the following evidence categories as defined by ECOLOG-Institut in April 2003:

ECOLOG Evidence Categories:

- *evidence* (German: Nachweis): consistent results of identical studies are available
- *consistent indication* (German: konsistenter Hinweis): (strong) indication from different study designs considering the same (patho)physiological endpoint are available
- *strong indication* (German: deutlicher Hinweis): consistent results from comparable studies are available
- *indication*: similar results from comparable studies are available
- *weak indication*: single study results are available

This report and its translation have been misrepresented at times. Here is a description of the circumstances from the original author:

Statement by Dr Hans-Peter Neitzke, ECOLOG-Institute

Andrea Klein

Mobile Telecommunications and Health. Read the full ECOLOG report.

Appendix E, research database listing (in German)

PARLIAMENTARY OFFICE FOR EVALUATION OF SCIENTIFIC AND TECHNOLOGICAL ALTERNATIVES

Hearing of 6 March 2002 at the request of Senators Jean-Louis LORRAIN and Daniel RAOUL

ARGUMENTS IN FAVOR OF APPLYING THE PRECAUTIONARY PRINCIPLE TO COUNTER THE EFFECTS OF MOBILE PHONE BASE STATIONS

By

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I – INTRODUCTION.

To allow for the correct functioning of the millions of mobile cellular telephones, thousands of mobile telephone base stations have been sited in Europe and throughout the entire world. In the preponderant digital technology currently on the market, high frequencies (or microwaves - MW) pulsed with extremely low frequencies (ELFs) are utilized. These high frequencies operate in the 900 MegaHertz (MHz) range for the GSM system (Global System for Mobile Communication) and in the 1800 MHz range for the DCS system (Digital Cellular System) (1). Let us note here that these 2 frequency ranges are very close to that of the domestic microwave oven which functions at 2450 MHz.

Of particular note:

- The text that follows does not pretend to be exhaustive concerning the numerous scientific studies that report the existence of biological effects relating to exposure to microwaves.
- Neither does it tackle the problem of the biological effects of the extremely low frequencies that are present in mobile telephone signals.

While for the users of mobile cellular telephones the MW exposure is in the "near field", for the populations living in the vicinity of base stations this exposure is in the "far field".(2)

During the "far field" exposure, different factors are liable to modify the level of exposure for the neighboring populations and in particular:

- The distance from the emitting source: at several meters from a base station, one can measure high frequency power densities of several tens of microwatts per

centimeter squared (uW/cm2) through 10uW/cm2 (6.1 volts per meter – V/m) at 50 meters[3].

- The fact of whether or not one falls within the principal high frequency lobe situated in front of emitting antennas: this principal lobe carries electromagnetic energy stronger than that of the secondary lobes found on the sides of and behind the antennas.
- The presence of "passive reflectors" in the form of metallic structures (window shutters, garage doors, flights of stairs, etc.) capable of amplifying high frequencies.[4]
- Fluctuations in the strength of the signals emitted by base stations as a function of the number of telephone calls being handled by them.
- The presence of other electromagnetic sources in the environment (power lines, electrical transformers, household electrical equipment, etc.) that can interfere with high frequencies from base stations.[5]

Measurement of electromagnetic fields in the environment of base stations at any given moment appears insufficient to accurately describe the level of chronic exposure to high frequency radiation for neighboring inhabitants. One key factor is that the number of antennas present and operating at a given site varies over the course of time according to the needs of different operators.

II. WHY SHOULD THE PRECAUTIONARY PRINCIPLE BE APPLIED TO COUNTER THE EFFECTS OF BASE STATIONS?

Several arguments can be advanced and are developed hereafter:

- Microwave effects have been known and referenced for more than 40 years.
- Exposure to a mobile cellular telephone generates biological effects.
- Biological effects are reported among people living in the vicinity of base stations and TV and radio transmitters.
- Certain countries have already adopted for their populations exposure limits lower than the currently accepted limits (in France).
- Sensitivity to high frequencies is not the same for all.

1. Microwave effects are known and have been referenced for more than 40 years.

Chronic exposure to microwaves is responsible for, among other things, the appearance of "microwave syndrome" and augments the risk of cancer.

1-1) "Microwave syndrome", also called radiofrequency sickness, has been described since the 1960's by researchers in Eastern countries[6]. One recent publication[7] clarifies that this pathology is tied to chronic exposure to pulsed high frequencies, similar to those generated by mobile cellular phone technology.

It is characterized by:

- A debility syndrome (fatigue, irritability, nausea, headaches, anorexia, depression).
- A cardiovascular dysfunction syndrome (bradycardia, tachycardia, hypertension or low blood pressure).
- A brain dysfunction syndrome (drowsiness, insomnia, concentration difficulties). Chronic exposure is also associated with dermatological problems (skin allergies, eczema, psoriasis), changes in blood chemistry, disruption of electroencephalograms and reproduction, effects on sense organs, and tumors.

1-2) Carcinogenic risk:

- From 1953 to 1976 the personnel of the American Embassy in Moscow were subjected to a chronic irradiation from microwaves at a mean power density of 1 to 2.4 uW/cm2 (1.9 to 3V/m), with maxima of short durations of 5 to 18 uW/cm2 (4.3 to 8.2 V/m) and with frequencies varying from 600 MHz to 9.5 GHz. One study of these personnel evidences an increased risk of leukemia and of uterine cancer [8].
- A study of 9,590 Canadian telecommunications workers underscores a significant increase in the number of melanomas when compared to the general population[9].
- A survey conducted by the American army on 880,000 persons exposed to microwaves reports a significant increase in the risk of brain tumors[10].
- The effects of chronic exposure of Polish servicemen to ultra-short waves associated with microwaves (frequencies from 150 to 3,500 MHz) have been studied for 20 years on approximately 120,000 persons. The results obtained show significant increases in the risk of cancers of the blood, esophagus, stomach, colon, skin (melanoma) and brain, for a microwave exposure not exceeding 200 uW/cm2 (27.4 V/m)[11].

2. Exposure to a mobile cellular telephone generates biological effects.

2-1) A Swedish-Norwegian epidemiological study of 11,000 mobile cellular telephone users gives evidence to a relationship between the exposure (number and duration of phone calls) and the increase in complaints such as headaches, fatigue, feeling of warmth on the ear[12], etc.

2-2) A French study of mobile phone users reports a significant rise in the frequency of complaints during the phone call such as tingling in the ear, feeling of discomfort, and warmth of the ear. These symptoms relate to duration of the call (> 2 min) and the number of calls per day (>2). This study also gives evidence to a greater sensitivity for women to sleep disturbances when compared to men. For the authors the feeling of warmth of the ear represents an alert that should bring about the termination of the phone call[13,14,15].

2-3) Other significant effects were observed during experiments conducted on human volunteers, in particular:

- Disruption of cerebral electrical activity[16].
- Changes in sleep[17].
- Effects on arterial pressure[18].

- Increase in headaches[19], etc.

2-4) Cancer risks.

- **In animals:**
  A significant rise in the risk of lymphoma following exposure to a GSM-type signal was observed in mice[20].
- **In man:**
  - Several publications find no association between mobile phone usage and the risk of cerebral tumors[21-22-23]. To the contrary, one study evidences a significant rise in the risk of cerebral tumor linked to mobile phone usage (Relative risk = 2.6. Confidence interval = 1.02 – 6.71)[24].
  - Concerning the eye, one study shows a significant rise (Relative risk = 4.2, Confidence interval = 1.2 – 14.5) in the risk of uveal melanoma in relation to "probable/certain" use of a cellular mobile phone[25].

2-5) COMOBIO Report (Communications Mobiles et Biologie: - Program financed by the Ministries of Research and of Industry).

In rats exposed to GSM-type electromagnetic waves generated by a mobile phone, the COMOBIO Report (Internet site: http://www.sig.enst.fr/comobio) underscores:

- Disturbances to the Blood-Brain Barrier (permeability of the intracranial blood vessels) which could be, according to the authors, at the origin of localized inflammatory processes responsible for the development of migraine headaches in susceptible people.
- A rise in the number of astrocytes (brain cells) translating to a inflammation that could be the sign, according to the authors, of neuron injury.
- Modifications in the quantity and/or the affinity for their receptors of essential brain neurotransmitters (GABA, Dopamine, Glutamate).

Of particular note:

- The COMOBIO study results confirm the known microwave effects on the Blood-Brain barrier, neurotransmitters, and cerebral receptors in various animal species[1].
- GABA is the brain's principal inhibitor neurotransmitter. Its decrease is the origin of diseases such as epilepsy. It is equally implicated in neurological diseases such as Parkinson's Disease and Huntington's Disease.
- Variations in the concentration of Dopamine in the brain are responsible for pathologies such as Parkinson's Disease and schizophrenia.
- Glutamate is the brain's principal exciter neurotransmitter. Its increase can lead to mood changes (irritability, aggression, etc.). It is equally involved in neurological diseases like Parkinson's Disease.

3. Biological effects are reported by persons living in the vicinity of mobile phone base stations and radio/television transmitters.

3-1) Persons in the vicinity of base stations.

According to an Australian government report[26], persons exposed in their homes at 200 meters from a base station complain of symptoms that recall those described in radiofrequency sickness: chronic fatigue, multiple allergies, sleep disturbances, and premature menopause.

The only study that currently exists is French and concerns 530 persons living in the vicinity of base stations[27,28]. In comparison with the reference group (persons situated at > 300 m or not exposed to base stations), it gives evidence of a significant rise in the frequency of certain complaints at a distance of:

- 100 m for irritability, depressive tendencies, memory loss, concentration difficulties, vertigo.
- 200 m for headaches, sleep disturbances, feelings of discomfort, skin problems
- 300 m for fatigue

3-2) Persons living in the vicinity of radio/television transmitters

Radio/television transmitters generate electromagnetic waves that are essentially ultra short (VHF) and/or high frequencies. Studies concerning these types of transmitters demonstrate biological effects at weak and very weak power densities:

- In mice, after 5 successive generations, exposure to an ultra short-wave transmitter (80 MHz) and a high frequency transmitter (900 MHz) and at a power density of 168 to 1.053 nanoWatts per centimeter squared (nW/cm2 – 0.8 to 1.98 V/m) brings about a lowering of fertility and a general impairment of the physiological state[29].
- In adults exposed within a radius of 2 km to radio (30 MHz)- and television (1 GHz) transmitters at power densities of 1.3 uW/cm2 (2.2V/m) for television and 5.7 uW/cm2 (4.6 V/m) for radio, a significant rise in the risk of leukemia and bladder cancer is observed.[30].
- In children exposed within a radius of 12 km to television relay transmitters at ultra short waves (63 to 215 MHz) at power densities from 0.02 to 8 uW/cm2 (0.07 to 5.4 V/m), a significant rise in cases of leukemia and deaths from leukemia is reported [31].
- In children exposed to ultra short (154 to 162 MHz) waves pulsed at 24.4 Hz from a radio transmitter at power densities of 0.3 to 1.64 uW/cm2 (1.06 to 7.8 V/m) when compared to children who were not exposed or were living behind the transmitter, these effects were demonstrated:
  - Reduction in memory and attention
  - Reduction in motor function
  - Slowing of reflexes[32].
- A study conducted around a radio transmitter in Rome gives evidence of a significant rise in mortality from leukemia for persons living within a 3.5 km radius (Relative risk = 2.5, Confidence interval = 1.07 to 4.83) and a significant lowering of risk with distance away from the transmitter[33].

4. Some countries have already adopted lower exposure limits for their populations than those currently allowed (in France).

In a 1998 order (decree) Italy adopted an exposure limit of 10 uW/cm2 (6.1 V/m) in place of 450 and 900 uW/cm2 (41 and 58 V/m) currently allowed in European regulations for the frequencies of 900 and 1800 MHz respectively[34]. In December 2000, The Grand Duchy of Luxembourg adopted an exposure limit of 3 V/m[35]. In Austria, the Salzburg Resolution recommends 0.6 V/m [36].

Of particular note:

- Mayors of French towns have taken actions to prohibit the siting of mobile phone base stations at distances less than 300 m from residences.
- In Belgium in a decision of March 6, 2000, the National Assembly prohibited the siting of a base station antenna by applying the precautionary principle in making mention of the reasonable question of risk for the health the people living nearby.

5. Sensitivity to high frequencies is not the same for all.

In 1995 the French Air Force conducted an epidemiological study in which 30 % of the personnel presented with a non-specific neurovegetative syndrome and 10% presented with authenticated clinical signs. Following this study, the National Institute of Research and Safety (INRS) concluded that: ***"These exists indisputably an individual sensitivity the the effects of radiofrequencies. Undergoing the same exposure, certain individuals can present with clinical disturbances and others not."***[37]

According to the International Radiation Protection Association (IRPA), this individual sensitivity to radiofrequencies would have a genetic basis[4].

Recent results underscore a greater sensitivity in women to electromagnetic waves generated by mobile phones[14,15] or by a mobile phone base station[28] when compared to men. It is equally apparent that children are more vulnerable that adults due to their developing nervous systems and a more intense absorption of electromagnetic energy by their tissues[2].

III – CONCLUSION.

With regard to the preceding, it is advisable from now on to apply the precautionary principle to counter the effects of mobile phone base stations. Some measures should be put into effect rapidly so as to protect the populations living in the vicinity of base stations. In accordance with the precautionary principle, base stations will not be sited at less than 300 meters from populated places. Antennas will be carefully orientated so that the principal high frequency radiation lobe is not directed toward places (day care centers, schools, hospitals, and senior citizen centers, etc.) where people are found who are susceptible to being more sensitive to electromagnetic nuisances. This prudent avoidance measure must be applied equally to residential areas reached by microwave beams since certain of their occupants can be "electrosensitive."

Regular measurement of high frequency power densities must be made at different times of day and various times of the year. In base station environments, those living in the vicinity should not be exposed to an average annual power density above 0.1 uW/cm2 (0.61 V/m). Zones where residents' exposure to high frequencies is above this

amount should be clearly marked (signs at ground level, signs with a signaling system, etc.)[1]

A medical follow-up for base station maintenance workers (blood analyses, baseline EEG's and ECG's) is imperative. No base station work site should be entered until the transmitting equipment has been deactivated. For other categories of workers who work in proximity to base stations (elevator maintenance, ventilation maintenance, etc.) it is advisable to post visible warnings about the biological risks and safe distances to respect in relation to base stations.

New microwave frequencies are being developed for mobile telephones. Those very close to microwave oven frequencies (UMTS system in the 2 to 3 GHz range) will contribute, with the buildout of new telecommunications networks (local radio loops, Hertzian bridges, etc.), to the growth of non-ionizing radiation exposure to populations.

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ACKNOWLEDGEMENT

The author gratefully acknowledges Janet NEWTON, President of The EMR Network for her help with the English translation.

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NeuroToxicology
NeuroToxicology 28 (2007) 434–440

Neurobehavioral effects among inhabitants around mobile phone base stations

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Received 20 October 2005; accepted 18 July 2006
Available online 1 August 2006

Abstract

Background: There is a general concern on the possible hazardous health effects of exposure to radiofrequency electromagnetic radiations (RFR) emitted from mobile phone base station antennas on the human nervous system.

Aim: To identify the possible neurobehavioral deficits among inhabitants living nearby mobile phone base stations.

Methods: A cross-sectional study was conducted on (85) inhabitants living nearby the first mobile phone station antenna in Menoufiya governorate, Egypt, 37 are living in a building under the station antenna while 48 opposite the station. A control group (80) participants were matched with the exposed for age, sex, occupation and educational level. All participants completed a structured questionnaire containing: personal, educational and medical histories; general and neurological examinations; neurobehavioral test battery (NBTB) [involving tests for visuomotor speed, problem solving, attention and memory]; in addition to Eysenck personality questionnaire (EPQ).

Results: The prevalence of neuropsychiatric complaints as headache (23.5%), memory changes (28.2%), dizziness (18.8%), tremors (9.4%), depressive symptoms (21.7%), and sleep disturbance (23.5%) were significantly higher among exposed inhabitants than controls: (10%), (5%), (5%), (0%), (8.8%) and (10%), respectively ($P < 0.05$). 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 Serial Addition Test (PASAT)]. Also, the inhabitants opposite the station exhibited a lower performance in the problem solving test (block design) than those 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. The last available measures of RFR emitted from the first mobile phone base station antennas in Menoufiya governorate were less than the allowable standard level.

Conclusions and recommendations: Inhabitants living nearby mobile phone base stations are at risk for developing neuropsychiatric problems and some changes in the performance of neurobehavioral functions either by facilitation or inhibition. So, revision of standard guidelines for public exposure to RFR from mobile phone base station antennas and using of NBTB for regular assessment and early detection of biological effects among inhabitants around the stations are recommended.

Keywords: Neurobehavioral effects; Mobile phone base stations; Radiofrequency radiations (RFR)

1. Introduction

There is a general concern about the possible hazardous health effects of exposure to radiofrequency radiations (RFR) emitted from mobile phone base station antennas. Disturbance of the nervous system leads to behavioral changes and may serve as an early indicator of disturbances in regulatory functions of many systems (Lai and Singh, 1994). Exposure of the neural tissue to RFR can cause electrophysiological changes in the nervous system (Navakatikian and Tomashevskaya, 1994; Velizarov et al., 1999). Some studies have suggested that RFR induce tissue heating leads to tissue damage (Gajsek et al., 2002; Preece et al., 1999). Some effects are observed among mobile phone users at low intensity and after repeated exposure (Hyland, 2000). The efflux of calcium ions from brain tissue is an important neurochemical effect of RFR as calcium ion plays an important role in the functions of the nervous system such as the release of neurotransmitters (Dutta et al., 1989). Experimental studies on

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0161-813X/$ – see front matter © 2006 Elsevier Inc. All rights reserved.
doi:10.1016/j.neuro.2006.07.012

rats indicated that both cholinergic and endogenous opioid transmitter systems inside the central nervous system are involved in the RFR-induced spatial working memory deficit (Lai et al., 1990, 1994). Moreover, RFR activate endogenous opioids in the brain, which in turn cause a decrease in cholinergic activity leading to short-term memory deficit. The stress hormone "corticotropin releasing factor" is also involved (Lai et al., 1994).

The emissions of a mobile phone base station are usually described by its effective radiated power which is given in Watts (W) (Nousir, 2002). The intensity of RFR is called the power density and is measured in (mW/cm^2). However, the specific absorption rate (SAR) that is measured in (W/kg) of tissue is a more reliable determinant and index for RFR biological effects than power densities as SARs reflect what is actually being absorbed rather than the energy quotient in space (Lai, 2000).

There are national and international safety guidelines for public exposure to RFR produced by mobile phone base stations. The Egyptian standard follows the ANSI/IEEE (1992), the permissible level of radiation power density is less than 0.4 mW/cm^2 (Egyptian Protocol of Criteria for Construction of Mobile Phone Base Stations, 2000).

Increased concern by the public about the safety and potential health effects at the appearance of a multitude of cellular transmitter antennas on the buildings and fear of unknown make it necessary to provide an answer to the question about safety of mobile phone base stations. So this study aimed to identify the possible neurobehavioral deficits among inhabitants living nearby the first mobile base station in Menoufiya governorate. To the best of our knowledge, no similar studies were carried out in Egypt till now, but other studies all over the world were performed mainly about safety of cellular phone use.

2. Subjects and methods

This cross-sectional study was conducted during the period from March to December 2003, included inhabitants living in and opposite to the building where the first mobile phone base station was constructed in Shebin El-Kom City (Menoufiya governorate) in 1998 (Fig. 1). The base station consists of three antennas and a shelter which contains an electric power station and the cables for the base station antennas (Fig. 2).

Eighty-five exposed individuals completed the study. Thirty-seven were current inhabitants living under the mobile phone base station antennas, while the other forty-eight were employees and agriculture engineers working in agricultural directorate building approximately 10 m opposite to the station. A control group constituted of 80 employees and engineers of a Shebin El-Kom agricultural administration building located approximately 2 km from the designated mobile phone base station was chosen and completed the study. They were matched for age, sex, occupation (employees and agriculture engineers), education level and mobile phone use. Consent forms were signed by all participants as they were volunteers, they were asked to do their best during testing. Approval and support from the ethical committee at Menoufiya Faculty of Medicine were obtained. None of the participants was informed

Fig. 1. The mobile phone base station antennas upon the building for agricultural professions.

about the purpose of the study so as to exclude any malingering effects. They were informed about the purpose of the study at the end. The average exposure time for RFR was 8 h for employees in the building underneath the antenna and 15 h for inhabitants of the building opposite the antenna. None of the controls lived near an antenna. The exclusion criteria were based on personal and medical histories including those having epilepsy, psychiatric disorders or specific cause of headache. The tools used to collect data were:

(A) Questionnaire: included data about personal, occupational and medical histories and neuropsychiatric complaints such as headache, irritability, memory changes, tremors, dizziness, blurred vision, and depressive symptoms (sensation of sadness) (Abdel Gawad, 1972). The questionnaire clearly

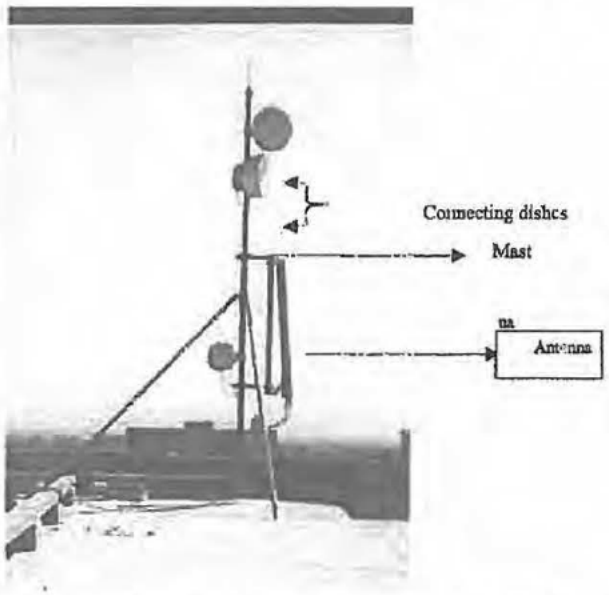

Fig. 2. The antenna of a mobile phone base station upon the building.

Table 1
Personal characteristics of exposed and control participants

Personal characteristics	Exposed ($n = 85$) mean ± S.D.		Controls ($n = 80$) mean ± S.D.		Test of significance	P-value
Age (years)	38.23 ± 14.56		39.88 ± 15.29		t-Test = 0.98	>0.05
	No	%	No	%		
Sex						
Male	48	56.50	47	58.75	$\chi^2 = 0.09$	>0.05
Female	37	43.50	33	41.25		
Education level						
Basic	3	3.50	0	0.00	$\chi^2 = 2.96$	>0.05
Secondary	34	40.00	35	43.75		
University	48	56.50	45	56.25		
Smoking						
Smokers	4	4.70	7	8.75	$\chi^2 = 1.08$	>0.05
Nonsmokers	81	95.30	73	91.25		
Mobile phone use						
Users	10	11.76	8	10.00	$\chi^2 = 0.01$	>0.05
Non-users	75	88.24	72	90.00		

Exposed and controls were of the same age, sex, educational levels, smoking habits and mobile phone use ($P > 0.05$).

stated the confidentiality of the response with no identification of names or contact information.

(B) Clinical examination: including general and local neurological examination.

(C) Neurobehavioral test battery (NBTB) (Lezak, 1995; Wechsler, 1981): a series of eight neurobehavioral tests translated into Arabic by Meleka (1991) was used. They included tests of: (1) Visuomotor Speed (Digit Symbol and Trailmaking B), (2) problem solving (block design), (3) attention and short-term auditory memory (PASAT, Letter Cancellation and Trailmaking A), (4) memory [(Digit Span forward and backward and Benton Visual Retention Test (BVRT)]. In addition to this NBTB, Eysenck Personality Questionnaire (EPQ) (Eysenck, 1990) was used to measure personality domains. Better performance is evaluated by higher scores obtained on tests of Digit Symbol, Block Design, PASAT, Digit Span and BVRT, while lower latency or time to complete Trailmaking parts A and B tests indicated better performance.

(D) Environmental measures: the most recent measures at the start of the study for the power density (mW/cm^2) of mobile phone base station antennas under the study done by the National Telecommunication Institute at the year 2000 were considered.

2.1. Statistical analysis

Data were collected, tabulated and statistically analyzed using chi-square (χ^2) and student t-tests and analysis of covariance (ANCOVA) for comparison between groups at 5% level of significance.

3. Results

Eighty-five exposed participants (56.5% males and 43.5% females) with a mean age (38.2 ± 14.5 years) were matched with 80 controls (58.7% males and 43.3% females) with a mean age (39.8 ± 15.2 years) ($P > 0.05$). They were also matched regarding sex distribution, education level, smoking and mobile phone use ($P > 0.05$, Table 1). Although both exposed and control groups did not differ significantly on studying these variables, the analysis of covariance (ANCOVA) was used to adjust for their influence as they are confounders for neurobehavioral performance. ANCOVA confirmed the same deficits as the t-test comparisons.

Table 2
Measurements of power density for mobile phone base station antennas upon the building under the study by National Telecommunication Institute (NTI, 2000)

Site of measurement	Power density (mW/cm^2)	The maximum permissible level for continuous exposure (mW/cm^2)
Antenna 1		
1	0.0020	0.0080
2	0.0024	0.0080
3	0.0063	0.0080
Antenna 2		
1	0.0033	0.0080
2	0.0032	0.0080
3	0.0026	0.0080
4	0.0067	0.0080
5	0.0024	0.0080
Antenna 3:		
1	0.0055	0.0080
2	0.0039	0.0080
3	0.0027	0.0080
Inside the shelter	0.0001	0.0080
At different sites	0.0001	0.0080
Within the apartment below antenna 1	0.0001	0.0080

NB: The maximum permissible level for intermittent exposure is 0.4 mW/cm^2 that decreased to 0.0080 mW/cm^2 for continuous exposure (Egyptian Protocol of Criteria for Construction of Mobile Phone Stations, 2000).

Table 3
Neurological complaints among exposed and controls

Neurological complaints	Exposed ($N = 85$), N (%)	Controls ($N = 80$), N (%)	χ^2	P-value	OR [95% CI]
Headache	20 (23.5)	8 (10.5)	4.44	<0.05	2.77 [1.06–7.4]
Memory changes	24 (28.2)	4 (5.0)	14.19	<0.001	7.48 [2.29–26.98]
Tremors	8 (9.4)	0 (0.0)	Fisher exact	<0.01	–
Dizziness	16 (18.8)	4 (5.0)	6.15	<0.01	4.41 [1.29–16.46]
Depressive symptoms	18 (21.7)	7 (8.8)	4.03	<0.05	2.8 [1.02–7.94]
Blurred vision	19 (22.3)	12 (15.0)	1.02	>0.05	1.63 [0.69–3.91]
Sleep disturbance	20 (23.5)	8 (10.0)	4.44	<0.05	2.77 [1.06–7.4]
Irritability	23 (27.1)	16 (20.0)	0.78	>0.05	1.48 [0.68–3.27]
Lack of concentration	14 (16.5)	8 (10.0)	0.99	>0.05	1.77 [0.65–4.97]

Fischer exact test was used as the calculated expected number in this cell was lower than five.

The last available measures of RFR from the mobile phone base stations antennas from the building in the study were less than the allowable standard level (0.4 mW/cm^2) (Table 2) in the year 2000. The numbers 1–5 indicate the sites at which the measures on a specific antenna were taken. The shelter was an enclosed room containing an electric power station and the cables for the base station antenna. The tower is a building of 12 stories. No measures were available for the buildings across the street or from the control building.

The prevalence of headache (23.5%), memory changes (28.2%), tremors (9.4%), dizziness (18.8%), depressive symptoms (21.7%) and sleep disturbances (23.5%) among exposed subjects were significantly higher than controls (10%, 5%, 0%, 5%, 8.8% and 10%; respectively) ($P < 0.05$, Table 3). The only difference between the exposed participants under the station as opposed to those working opposite it was in the prevalence of sleep disturbance (10.8% and 31.3%, respectively) ($P < 0.05$, Table 4).

The exposed participants exhibited a significantly poorer performance than controls in one test of attention and short-term auditory memory (PASAT), but they exhibited significantly better performance than controls in tests of visuomotor speed (Digit Symbol and Trailmaking B) ($P < 0.01$) and one test of attention (Trailmaking A) ($P < 0.001$). The difference in scores in Trailmaking A was so high and these scores were verified again and no numerical errors were found. There was no significant difference between exposed and controls in the score of EPQ scale ($P > 0.05$, Table 5). The exposed participants opposite to the station exhibited a significantly lower performance in the problem solving (Block Design) than those living under the station ($P < 0.05$, Table 6).

4. Discussion

The extensive use of mobile phones has been accompanied by public debate about possible adverse effects on human health. However, little is known about the effects of long-term exposure that is experienced by people living near mobile phone base stations (Bortkiewicz et al., 2004).

The last available measurements of RFR emitted from mobile phone base station antennas under the study in the year 2000 were less than the Egyptian allowable standard level (0.4 mW/cm^2). However, the level of exposure to RFR increases or decreases according to the number of phone calls from different parts of country or other countries. The number of subscribers in mobile phone service increased approximately four times within 2 years from about 1,575,000 (2.5% of the Egyptian population) in the year 2000 at the time of the previously measured levels to about 7,000,000 (9.5% of the Egyptian population) in the year 2002 (El-Mesairy, 2002) just before the beginning of this study in the year 2003. Consequently, it is expected that the previously mentioned levels of exposure to RFR in the year 2000 were higher at the time of the study.

Table 4
Neurological complaints among inhabitants living under and opposite the station

Neurological complaints	Inhabitants		χ^2	P-value	OR [95% CI]
	Opposite the station ($N = 48$), N (%)	Under the station ($N = 37$), N (%)			
Headache	15 (31.3)	5 (13.5)	2.73	>0.05	2.91 [0.85–10.47]
Memory changes	12 (25.0)	12 (32.4)	0.26	>0.05	0.69 [0.24–1.99]
Tremors	4 (8.3)	4 (10.8)	0.00	>0.05	0.75 [0.14–3.92]
Dizziness	9 (18.8)	7 (18.9)	0.07	>0.05	0.99 [0.29–3.38]
Depressive symptoms	9 (18.8)	8 (21.6)	0.10	>0.05	0.84 [0.25–2.75]
Blurred vision	12 (25.0)	7 (18.9)	0.16	>0.05	1.43 [0.45–4.65]
Sleep disturbance	15 (31.3)	4 (10.8)	3.92	<0.05	3.75 [1.01–15.09]
Irritability	16 (33.3)	7 (18.9)	1.53	>0.05	2.14 [0.7–6.74]
Lack of concentration	9 (18.8)	5 (13.5)	0.12	>0.05	1.48 [0.4–5.71]

Table 5
Mean ± S.D. of neurobehavioral performance and personality scores of exposed and controls

Neurobehavioral tests	Exposed ($n = 85$)		Controls ($n = 80$)		t-Test	P
	$\bar{X}$	±S.D.	$\bar{X}$	±S.D.		
Performance tests						
Visuomotor speed						
Digit symbol	41.43	11.91	31.30	11.98	3.19	<0.01
Trailmaking B	84.79	21.88	108.40	39.49	3.16	<0.01
Problem solving						
Block design	24.32	7.23	24.15	5.25	0.10	>0.05
Attention						
PASAT	12.20	4.20	15.47	5.49	4.31	<0.001
Letter cancel	30.28	5.20	31.56	5.92	1.35	>0.05
Trailmaking A (s)	26.10	21.43	88.25	25.46	3.84	<0.001
Memory						
Digit span forward	6.40	1.69	7.05	2.50	1.21	>0.05
Digit span backwards	2.60	0.82	2.37	0.89	1.73	>0.05
Digit span total	9.09	2.82	9.42	3.78	0.38	>0.05
BVRT	4.48	1.62	3.95	0.97	1.36	> 0.05
Eysenck personality questionnaire (EPQ)						
P (psychoticism)	7.04	1.73	7.40	2.10	1.20	> 0.05
C (criminality)	12.69	3.60	13.58	4.39	0.86	>0.05
N (neuroticism)	10.84	3.93	12.20	4.14	1.29	> 0.05
E (extroversion)	10.82	3.62	10.85	3.95	0.38	>0.05
L (lie)	15.45	4.18	10.10	3.45	0.62	>0.05

On studying the prevalence of neurological complaints among exposed subjects and controls, headache, memory changes, tremors, dizziness, depressive symptoms and sleep disturbance were significantly higher among exposed (23.5%, 28.2%, 9.4%, 18.8%, 21.7% and 23.5%, respectively) than controls (10%, 5%, 0%, 5%, 8.8% and 10%, respectively) ($P < 0.05$). These results agree with Santini et al. (2002) who found that the frequency of headache, loss of memory, irritability, dizziness, depression and sleep disturbance was significantly higher among people living near cellular phone base stations (25.4%, 27.6%, 4.5%, 4%, 9.2% and 4.1%, respectively) than controls ($P < 0.05$). Also, Frey (1998) and Leif (2003) observed various complaints mostly of sleep disturbance, irritability, depression, headache, vertigo and concentration difficulties among people living near mobile base stations.

On comparing exposed inhabitants living in the building under the station with those opposite the station regarding

Table 6
Mean ± S.D. of neurobehavioral performance score of inhabitants living under and opposite the station

Performance tests	Inhabitants ($n = 85$)				Student's t-test	P
	Under the station ($n = 37$)		Opposite the station ($n = 48$)			
	$\bar{X}$	±S.D.	$\bar{X}$	±S.D.		
Visuomotor speed						
Digit symbol	42.24	12.67	40.79	11.72	0.41	> 0.05
Trailmaking B	89.52	24.95	81.35	19.16	0.11	> 0.05
Problem solving						
Block design	27.57	4.61	21.37	7.97	3.23	<0.01
Attention						
PASAT	11.69	1.73	12.25	2.10	1.80	> 0.05
Letter cancel	32.31	5.43	33.15	5.65	0.52	>0.05
Trailmaking A (s)	65.24	24.16	56.96	19.24	0.11	> 0.05
Memory						
Digit span forward	6.63	0.57	6.30	1.77	0.63	>0.05
Digit span backward	3.21	1.02	2.90	0.75	1.43	>0.05
Digit span total	9.84	2.29	9.20	2.61	1.68	> 0.05
BVRT	4.57	1.33	4.40	1.88	0.35	> 0.05

neurological complaints, there was a significant increase in the prevalence of sleep disturbance among the inhabitants opposite to the station (31.3% versus 10.8%) ($P < 0.05$). This could be explained by the fact that the concrete roof can soak up to 5–30% of the radiation from the antennas, so the levels of radiation in the building under the station may be lower than opposite and pose fewer hazards (El-Mesairy, 2002; Knave, 2001).

On studying the neurobehavioral performance using NBTB and personality domains using (EPQ) scale, the exposed participants exhibited a significantly better performance than controls in tests of visuomotor speed (Digit Symbol and Trail making B) and one test of attention (Trail making A) than controls, but they exhibited a poorer performance in PASAT test (which measures attention and short-term auditory memory) than controls. Better performance is evaluated by higher scores obtained on tests of Digit Symbol, Block Design, PASAT, Digit Span and BVRT, by contrast: lower latency or time to complete Trailmaking parts A and B tests indicated better performance.

The better performance in some neurobehavioral tests in this study agreed with Koivisto et al. (2000) and Lee et al. (2001) who suggested that the electromagnetic field emitted by cellular telephones may have a facilitatory effect on brain functioning. On the other hand, responses of central nervous system to RFR could be a stress response (Duan et al., 1998; Lai and Singh, 1997). Stress effects are well known to accumulate over time and involve first adaptation and then an eventual breakdown of homeostatic processes. Moreover, Lai et al. (1990, 1994) experimental studies on rats indicated that RFR can activate endogenous opioids in the brain, which in turn cause a decrease in cholinergic activity leading to short-term memory deficit. The stress hormone "corticotropin releasing factor" is also involved. This may explain the lower performance of exposed subjects in PASAT test in this study. On the other hand, on studying the personality domains using (EPQ) scores, there was no difference between exposed inhabitants and controls in the present study regarding these scores. This may be explained by the fact of the presence of relatively low levels and short duration of exposure (about 5 years) to RFR since the establishment of the base station under the study, a matter which needs a further wide scale research to be verified.

5. Conclusion and recommendations

The inhabitants around mobile base station antennas significantly complain or develop headache, memory changes, tremors, dizziness, depressive symptoms and sleep disturbance than controls. Also, there are some effects of RFR emitted from these antennas on neurobehavioral performance. Therefore, the study recommends:

(1) Annual monitoring of RFR emitted from the mobile phone base station antennas should be carried out as their values may become higher due to the expected extensive future use of mobile phones and hence more activity and more arising emissions leading to increase in incidence and severity of neurobehavioral disorders among inhabitants around these stations. At the same time, this will clarify controversies met with in this study regarding scores of some NB tests for exposed inhabitants.
(2) For inhabitants near mobile phone base station, NBTB can be used as a useful non-invasive tool for assessment and early detection of subtle effects of exposure to RFR.
(3) Further follow up wide scale studies for those inhabitants exposed for longer durations to RFR arising from mobile phone base stations should be done to clarify if there is an actual positive association and/or causation between exposure and either of the development of neurobehavioral complaints or NBTB and personality changes so as to cut off the challenge of presence of controversies in the results done in this field all over the world.

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INCREASED INCIDENCE OF CANCER NEAR A CELL-PHONE TRANSMITTER STATION.

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International Journal of Cancer Prevention

VOLUME 1, NUMBER 2, APRIL 2004

Abstract

Significant concern has been raised about possible health effects from exposure to radiofrequency (RF) electromagnetic fields, especially after the rapid introduction of mobile telecommunications systems. Parents are especially concerned with the possibility that children might develop cancer after exposure to the RF emissions from mobile telephone base stations erected in or near schools. The few epidemiologic studies that did report on cancer incidence in relation to RF radiation have generally presented negative or inconsistent results, and thus emphasize the need for more studies that should investigate cohorts with high RF exposure for changes in cancer incidence. The aim of this study is to investigate whether there is an increased cancer incidence in populations, living in a small area, and exposed to RF radiation from a cell-phone transmitter station.

This is an epidemiologic assessment, to determine whether the incidence of cancer cases among individuals exposed to a cell-phone transmitter station is different from that expected in Israel, in Netanya, or as compared to people who lived in a nearby area. Participants are people (n=622) living in the area near a cell-phone transmitter station for 3-7 years who were patients of one health clinic (of DW). The exposure began 1 year before the start of the study when the station first came into service. A second cohort of individuals (n=1222) who get their medical services in a clinic located nearby with very closely matched, environment, workplace and occupational characteristics was used for comparison.

In the area of exposure (area A) eight cases of different kinds of cancer were diagnosed in a period of only one year. This rate of cancers was compared both with the rate of 31 cases per 10,000 per year in the general population and the 2/1222 rate recorded in the nearby clinic (area B). Relative cancer rates for females were 10.5 for area A, 0.6 for area B and 1 for the whole town of Netanya. Cancer incidence of 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 indicates an association between increased incidence of cancer and living in proximity to a cell-phone transmitter station.

Key Words:

Radiofrequency radiation; Cell-phone transmitter station (cell-phone antenna); Cancer incidence study; Netanya.

Introduction

Much concern has been expressed about possible health effects from exposure to radiofrequency (RF) electromagnetic fields, particularly following publication of scientific reports suggesting that residence near high voltage power lines may be associated with an increased risk of developing childhood leukemia. While interest tended to focus on microwave ovens and radar equipment in the past, it is now mobile telecommunication that attracts the most attention. The rapid introduction of mobile telecommunications systems, the exponential increase in the use of such phones, and the many base stations needed for serving them have engendered renewed concerns about exposure to RF radiation.

The biological effects of low level electromagnetic fields and a possible potential relation to cancer causation are controversial. There have been several epidemiological studies of the possible adverse health effects associated with environmental exposure to extremely low frequency (0-300 Hz) non-ionizing radiation, such as that emitted by power cables and electric substations, linking such exposure to leukemia, brain cancer, male breast cancer and skin and eye melanoma (1-11).

Far less attention has been paid to health hazards from environmental exposure to radiation in the RF range (100 kHz to 300 GHz), including the radiation emitted from cell-phone equipment, in the frequencies of 850 MHz, at field strengths much below those required to produce thermal effects. The few epidemiologic studies that did report on cancer incidence in relation to RF radiation (mainly from occupational exposure including microwave and radar and from living in proximity to TV towers) have generally presented negative or inconsistent results, or were subject to possible confounding from other exposures (12-20).

Laboratory studies in this area have also been confusing and conflicting. While some animal studies suggested that RF fields accelerate the development of cancers, other studies found no carcinogenic effect (21).

Obviously, there is an urgent need for extensive, well-conducted epidemiological and laboratory studies (21-24).

An opportunity for studying the effect of RF radiation presented itself in South Netanya, where a cell-phone transmitter station was located in the middle of a small area. We took advantage of the fact, that most of the population in the investigated area belong to one outpatient clinic (of DW), and undertook an epidemiologic assessment, in which we compared the cancer incidence of this area to those of a nearby clinic, to the national incidence rates of the whole country and to the incidence rates in the whole town of Netanya.

Material and methods

Radio-frequency radiation

The cell-phone transmitter unit is located at the south of the city of Netanya in an area called Irus (area A). It first came into service in 7/96. The people in this area live in half a circle with a 350 meter radius centered on the transmitter.

The antenna is 10 meters high. The antenna bears total maximum transmission power at frequencies of 850 MHz of 1500 watt when working at full power.

Both measured and predicted power density (for the frequencies of 850 MHz) in the whole exposed area were far below 0.53 $\mu w/cm^2$ thus the power density is far below the current guidelines which are based on *the thermal effects of RF exposure.* Exact measured power density in each house are described in table 1.

The current Israeli standard uses 50 packets/sec with Time-Division-Multiple-Access (TDMA) quadrature modulation. The antenna produces 50 packets/sec, using a 3:1 multiplexed Time-Division-Multiple-Access (TDMA) modulation with a 33% duty cycle.

Statistical analysis:

We conducted a cancer incidence study to investigate the incidence of cancer cases of individuals exposed to a cell-phone transmitter station, in comparison to those of a nearby clinic, to the national incidence rates of the whole country and to the incidence rates in the whole town of Netanya.

The cohort included 622 people living in the Irus area (area A) for at least 3-7 years and were patients of one health clinic (of DW). The exposure began in 7/96 which was 1 year before the start of our study.

Statistical analysis was based on the comparison of observed and expected numbers of cancer cases.

In order to compare incidence rates, 95% confidence intervals were computed.

The observed number of cancer cases is the number of all the cancer cases in the exposed cohort in the period between 7/97 - 6/98.

In order to estimate relative risk, rate ratios were computed using the rate of 3 different cohorts as the base (the expected values):

The rate in a nearby clinic (which serves a population of 1222 people, all of them living in area B) during the same period of time, i.e. 7/97 - 6/98. In order to compare area A and area B populations we used:

χ^2 test to compare origin and sex division

t- test to compare age means

The national incidence rates of the whole country.

The incidence rates in the whole town of Netanya where the 2 clinics (of area A and B) are located. The data of 2 and 3 were given to us by the Israel cancer registry and are updated to the years 91-94.

We also examined the history of the exposed cohort (of the A area) for malignancies in the 5 years before the exposure began and found only 2 cases in comparison to 8 cases detected one year after the transmitter station came into service.

Results

Of the 622 people of area A, eight cases of different kinds of cancer were diagnosed in a period of only one year (from July 1997 to June 1998). Details on these cases are presented in Table 1. Briefly, we found 3 cases of breast carcinoma, and one case of ovary carcinoma, lung carcinoma, Hodgkin's disease, osteoid osteoma, and hypernephroma.

This rate of cancers in the population of area A was compared both with the rate of 31 cases per 10,000 per year in the general population and the 2/1222 rate recorded in a nearby clinic. To each one of the rates, a 95 percent confidence interval was calculated (Table 2): the rates in area A were significantly higher than both those in area B, and the population as a whole.

A comparison of the relative risk revealed that there were 4.15 times more cases in area A than in the entire population.

The population characteristics of areas A and B were very similar (Table 2-5). The χ^2 test for comparing gender and origin frequencies showed no significant differences in these parameters between the two areas. Age means, as compared by t-test and age distribution stratum also showed no significant difference between the two groups.

Table 2a lists the rates of cancer incidence of areas A and B compared to data of the whole town of Netanya. The comparison clearly indicated that the cancer incidence of women in area A is significantly higher ($p<0.0001$) compared with that of the whole city.

Discussion

Our study indicates an association between an increased incidence of cancer and living in proximity to a cell-phone transmitter station.

Studies of this type are prone to biases. Possible methodological artefacts to explain our alarming results were considered:

Differences in socioeconomic class and employment status, and demographic heterogeneity due to differences in age, sex and ethnicity were excluded. The two areas that were compared have very closely matched environment, workplace and occupational characteristics.

Confounding variables affecting individuals could not be absolutely adjusted for, however, there was no ionizing radiation that could affect the whole community except the previously mentioned mobile antenna station. There is no traffic density in this area, neither is there any industry or any other air pollution. The population of area A

(on which adequate data could be gathered) did not suffer from uncommon genetic conditions, nor did they receive carcinogenic medications.

Differences in diagnosis and registration of cancer cases. Although we cannot altogether exclude the possibility that higher awareness of the physician responsible for area A led to an artificial increase in cancer cases in this area, this possibility seems to us very unlikely, since both are qualified family physicians.

Several findings are of particular interest:

The measured level of RF radiation (power density) in the area was low; far below the current guidelines based on the thermal effects of RF exposure. We suggest, therefore, that the current guidelines be re-evaluated.

The enormous short latency period; less than 2 years, indicates that if there is a real causal association between RF radiation emitted from the cell-phone base station and the cancer cases (which we strongly believe there is), then the RF radiation should have a very strong promoting effect on cancer at very low radiation!

Although the possibility remains that this clustering of cancer cases in one year was a chance event, the unusual sex pattern of these cases, the 6 different cancer kinds, and the fact that only one patient smoked make this possibility very improbable and remote. It should be noted that 7 out of 8 cancer cases were women, like in the work of Maskarinec (25) who found 6 out of 7 leukemia cases in proximity to radio towers to occur in girls. Such unusual appearances of cancer cases due to one accused factor on two completely different occasions is alarming.

We are aware of at least 2 areas in which a drastic increase in the incidence of cancer cases occurred near a cell-phone antenna, however, the setup was not suitable for a well design study of those cases. In one of them (which also got publication in the daily newspapers) there were 6 out of 7 cancer cases in women working in a store in close proximity to a cell-phone antenna.

In conclusion, the results of this study showed that there was a significantly greater incidence of cancers of all kinds within the vicinity of a cell-phone transmitter station.

It would be certainly too premature to draw any conclusions from our results before they are confirmed and repeated by other studies from other areas, particularly in view of the fact that a great majority of papers on this subject showed that RF fields and mobile telephone frequencies were not genotoxic, did not induce genetic effects in vitro and in vivo, and were not found to be teratogenic or to induce cancers (24). The results of this paper should, however, serve as an alarm and emphasize the need for further investigations.

Addendum

At one year following the close of the study, 8 new cases of cancer were diagnosed in area A and two cases in area B. Among the cases diagnosed in area A was one of osteoid osteoma, the second case from the beginning of the study.

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Acknowledgment

The authors are grateful to Aviva Zeer M.Sc from the Zinman College of Phisical Education and Sport Sciences At the Wingate Institute, Israel, for help with the statistical analysis.

The opinions expressed herein are solely those of the writers and do not necessarily reflect the opinions of the institutions with which the writers are associated.

Table 1: Cancer cases in area A

NAME	AGE	SEX	ORIGIN[1]	SMO-KING	CANCER TYPE	Measured power density in $\mu w/cm^2$
Hemda	52	f	ash	No	Ovary ca stage 1	$0.3\mu w/cm^2$
Edna	42	f	sph	No	Breast ca in situ	$0.4\mu w/cm^2$
Tania	54	f	ash	No	Breast ca	$0.5\mu w/cm^2$
Neli	67	f	ash	Yes	Breast ca	$0.4\mu w/cm^2$
Galit	24	f	ash	No	Hodgkins	$0.5\mu w/cm^2$
Miriam	61	f	sph	No	Lung ca	$0.3\mu w/cm^2$
Masal	37	f	sph	No	Osteoid osteoma	$0.4\mu w/cm^2$
Max	78	m	ash	No	Hypernephroma	$0.3\mu w/cm^2$

1. Origin: ash - Ashkenazien Jews sph - Spharadic Jews

Table 2: Cancer rates in area A, B and the total population.

	No. of cancer cases	populati on size	Rate per year per 10,000	confide interval lower limit	ce (95%) upper limit	relative risk
Area A	8	622	129	40.1	217.2	4.15
Area B	2	1222	16	-6.3	39.0	0.53
total populat	31	10,000	31	20.1	41.9	1.00

Table 2a: Cancer rates in area A, B and the whole town.

	Male		Female	
	rate	Relative rate	rate	relative rate
Area A	33	1.4	262	10.5
Area B	17	0.7	16	0.6
Whole town	24	1	25	1

Table 3: Comparing area A to area B by gender.

Gender	Area A		Area B	
	N	%	N	%
male	290	49	669	49
female	305	51	685	51

Table 4: Comparing area A to area B by origin.

Origin	Area		Area	
	N	%	N	%
Sfaradic	340	55	551	45
Ashkenaz	239	38	620	51
Russian	41	7	51	4

Table 5: Comparing age means in both areas.

	Area A		Area B	
	mean	Std	mean	std
age	26.5	17.9	25.5	12.4

Table 5: Age distribution by stratum.

	0-1	1-10	10-20	20-30	30-40	40-50	50-60	60-70	>70
IRUS	16	143	157	65	70	88	41	21	21
POLEG	31	285	257	139	180	158	83	55	34

New study links over 7,000 cancer deaths to cell phone tower radiation exposures

Saturday, June 22, 2013 by: Lloyd Burrell
Tags:

(NaturalNews) Could exposure to radiation from cell phone towers really responsible for over 7,000 cancer deaths? According to research findings from Brazil, the facts speak for themselves. The study established a direct link between cancer deaths in Belo Horizonte, Brazil's third largest city, with the cell phone network.

What does this direct link stem from?

Over 80 percent of those who succumbed to certain types of cancer resided approximately a third of a mile away from one of the hundreds of cell phone antennae that populate the city.

These cancers, primarily found in the prostate, breasts, lungs, kidneys, liver, are the ones associated with exposure to electromagnetic fields (EMFs).

This is a real concern for cell phone users and even non- cell phone users. Those who shun mobile phone technology still suffer the consequences of cell phone tower radiation.

Is the Brazilian study an isolated study?

Cell phone tower studies which examined the relationship between radiation exposure and cancer rates were conducted in the city of San Francisco in addition to cities in Austria, Germany, and Israel, dating as far back as the 1970s. All the studies shared similar findings: living within a certain proximity to a cell phone tower increased the risk of cancer anywhere from two to 121 times depending on what type of cancer was detected.

Adilza Condessa Dode, PhD, one of the engineering researchers as well as the coordinator of the Brazilian study, addresses those who are concerned about cell phone tower radiation and explains the Brazil study does not stand alone. Dode elaborates, "these levels (EMFs), are already high and dangerous to human health. The closer you live to an antenna, the greater the contact with the electromagnetic field."

The Brazilian study covers just one city in Brazil. Residents of the United States are vulnerable too as America is home to hundreds of thousands of these radiation emitting towers. In the U.S., with the proliferation of cell phones and the growing needs of cell phone users in recent years, there has been an explosion in cell towers.

Overwhelming evidence

A growing number of organizations and many more studies support the conclusions of the Brazilian study. *The International Association for Research on Cancer* (IARC), based upon findings from research

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conducted by an international think tank, came to the conclusion that radio frequency radiation, including the radiation spewing from cell towers, is a possible carcinogen.

The BioInitiative 2012 Report written by a group of leading independent international scientists has put out an unequivocal health warning against exposure to EMFs. This includes exposures from cell phone towers.

Why are cell phone towers particularly dangerous?

The threat comes from the constant nature of the activity of the towers; they emit pulsed radio frequency radiation. This radiation has been shown in thousands of studies to cause biological damage to the body and to be a precursor to disease.

What are some of the dangers (besides [illegible]), which result from this damage and are associated with EMFs and cell phone antennae?

- Genetic mutations
- Memory disruptions
- Hindered learning
- ADD
- Insomnia
- Brain disorders
- Hormonal imbalances
- Infertility
- Dementia
- Heart complications

These dangers clearly make it imperative to take action.

Cell towers are here to stay but their implantation needs effective regulation in terms of location and radiation levels. The 1996 *Telecommunications Act* (TCA), does not qualify the public's right to protest cell tower locations based on health hazards. **Cell towers should be located away from residential areas and far away from schools and day care centers.**

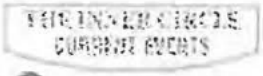
Sources:

[illegible]

About the author:
Lloyd Burrell is the author of a new ebook entitled "How To Beat Electrical Sensitivity" which offers a solution to the growing number of people whose health is being compromised by exposure to wireless and similar technologies, see [illegible]

Since falling prey to a violent reaction to his cell phone in 2002 he has spent the last 10 years researching the effects of electromagnetic fields (EMFs) on health. He now offers a complete solution on how to live a healthy life in our increasingly electromagnetic world.

You can download his free EMF Health Report and subscribe to his newsletter by visiting his website [illegible]. You can also follow him on [illegible] and Youtube.



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The Influence of Being Physically Near to a Cell Phone Transmission Mast on the Incidence of Cancer

Horst Eger, Klaus Uwe Hagen, Birgitt Lucas, Peter Vogel, Helmut Voit

Published in *Umwelt·Medizin·Gesellschaft* 17,4 2004, as:
'Einfluss der räumlichen Nähe von Mobilfunksendeanlagen auf die Krebsinzidenz'

Summary

Following the call by Wolfram König, President of the Bundesamt für Strahlenschutz (Federal Agency for radiation protection), to all doctors of medicine to collaborate actively in the assessment of the risk posed by cellular radiation, the aim of our study was to examine whether people living close to cellular transmitter antennas were exposed to a heightened risk of taking ill with malignant tumors.

The basis of the data used for the survey were PC files of the case histories of patients between the years 1994 and 2004. While adhering to data protection, the personal data of almost 1,000 patients were evaluated for this study, which was completed without any external financial support. It is intended to continue the project in the form of a register.

The result of the study shows that the proportion of newly developing cancer cases was significantly higher among those patients who had lived during the past ten years at a distance of up to 400 metres from the cellular transmitter site, which has been in operation since 1993, compared to those patients living further away, and that the patients fell ill on average 8 years earlier.

In the years 1999-2004, *ie* after five years' operation of the transmitting installation, the relative risk of getting cancer had trebled for the residents of the area in the proximity of the installation compared to the inhabitants of Naila outside the area.

Key words: cellular radiation, cellular transmitter antennas, malignant tumours

The rapid increase in the use of mobile telephony in the last few years has led to an increasing number of cell phone transmission masts being positioned in or near to residential areas. With this in mind, the president of the German governmental department for protection against electromagnetic radiation (Bundesamtes für Strahlenschutz) Wolfram König, has challenged all doctors to actively help in the work to estimate the risks from such cell phone masts. The goal of this investigation was therefore to prove whether on not people living near to cell phone masts have a higher risk of developing cancerous tumours.

The basic data was taken from the medical records held by the local medical authority (Krankenkasse) for the years 1994 to 2004. This material is stored on computer. In this voluntary study the records of roughly 1,000 patients from Naila (Oberfranken) were used, respecting the associated data protection laws. The results from this study show a significantly increased likelihood of developing cancer for the patients that have lived within 400 metres of the cell phone transmission mast (active since 1993) over the last ten years, in comparison to those patients that live further away. In addition, the patients that live within 400 metres tend to develop the cancers at a younger age. For the years 1999 to 2004 (*ie* after five or more years of living with the cell phone transmission mast), the risk of developing cancer for those living within 400 metres of the mast in comparison to those living outside this area, was three times as high.

Introduction

A series of studies available before this investigation provided strong evidence of health risks and increased cancer risk associated with physical proximity to radio transmission masts. Haider *et al.* reported in 1993 in the Moosbrunn study frequent psychovegetive symptoms below the current safety limit for electromagnetic waves (1). In 1995, Abelin *et al.* in the Swiss- Schwarzenburg study found dose dependent sleep problems (5:1) and depression (4:1) at a shortwave transmitter station that has been in operation since 1939 (2).

In many studies an increased risk of developing leukaemia has been found; in children near transmitter antennas for Radio and Television in Hawaii (3); increased cancer cases and general mortality in the area of Radio and Television transmitter antennas in Australia (4); and in England, 9 times more leukaemia cases were diagnosed in people who live in a nearby

area to the Sutton Coldfield transmitter antennas (5). In a second study, concentrating on 20 transmitter antennas in England, a significant increased leukaemia risk was found (6). The Cherry study (7) indicates an association between an increase in cancer and living in proximity to a transmitter station. According to a study of the transmitter station of Radio Vatican, there were 2.2 times more leukaemia cases in children within a radius of 6 km, and adult mortality from leukaemia also increased (8).

In 1997 Goldsmith published the Lilienfeld-study that indicated 4 times more cancer cases in the staff of the American Embassy in Moscow following microwave radiation during the cold war. The dose was low and below the German limit (9).

The three studies of symptoms indicated a significant correlation between illness and physical proximity to radio transmission masts. A study by Santini *et al.* in France resulted in an association between irritability, depression, dizziness (within 100m) and tiredness within 300m of a cell phone transmitter station (10).

In Austria there was an association between field strength and cardiovascular symptoms (11) and in Spain a study indicates an association between radiation, headache, nausea, loss of appetite, unwellness, sleep disturbance, depression, lack of concentration and dizziness (12).

The human body physically absorbs microwaves. This leads to rotation of dipole molecules and to inversion transitions (13), causing a warming effect. The fact that the human body transmits microwave radiation at a very low intensity means that since every transmitter represents a receiver and transmitter at the same time, we know the human body also acts as a receiver.

In Germany, the maximum safe limit for high frequency microwave radiation is based on purely thermal effects. These limits are one thousand billion times higher than the natural radiation in these frequencies that reaches us from the sun.

The following study examines whether there is also an increased cancer risk close to cellular transmitter antennas in the frequency range 900 to 1800 MHz. Prior to this study there were no published results for long-term exposure (10 years) for this frequency range and its associated effects to be revealed. So far, no follow-up monitoring of the state of health of such a residential population has been systematically undertaken.

Materials and Methods

Study area

In June 1993, cellular transmitter antennas were permitted by the Federal Postal Administration in the Southern German city of Naila and became operational in September 1993.

The GSM transmitter antenna has a power of 15 dbW per channel in the 935MHz frequency range. The total

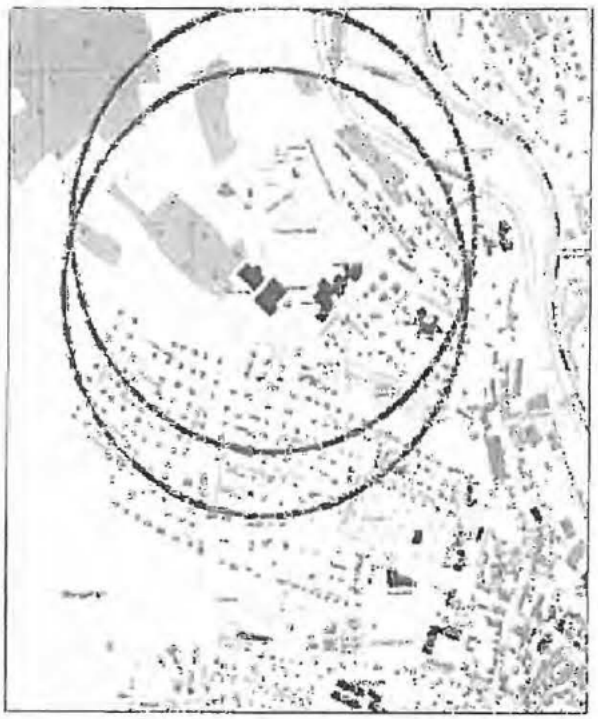

Fig. 1: Schematic plan of the antenna sites

transmission time for the study period is ca. 90,000 hours. In December 1997 there followed an additional installation from another company. The details are found in an unpublished report, appendix page 1-3 (14).

To compare results an 'inner' and 'outer' area were defined. The inner area covered the land that was within a distance of 400 metres from the cellular transmitter site. The outer area covered the land beyond 400 metres. The average distance of roads surveyed in the inner area (nearer than 400m) was 266m and in the outer area (further than 400m) 1,026m. Fig. 1 shows the position of the cellular transmitter sites 1 and 2, surrounded by circle of radius 400 metres. The geographical situation shows the transmitter sites (560m) are the highest point of the landscape, which falls away to 525m at a distance of 450m. From the height and tilt angle of the transmitter it is possible to calculate the distance where the transmitter's beam of greatest intensity strikes the ground (see Fig. 2).

The highest radiation values are in areas of the main

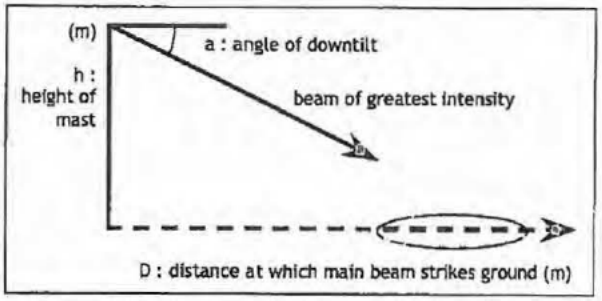

Fig. 2: From the mast height h and the downtilt angle a, the distance D at which the main beam reaches ground is given by D = tan(90-a) × h

beam where it hits the ground and from the expected associated local reflection; from this point the intensity of radiation falls off with the square of the distance from the transmitter.

In Naila the main beam hits the ground at 350m with a beam angle of 6 degrees (15). In the inner area, additional emissions are caused by the secondary lobes of the transmitter; this means in comparison that from purely mathematical calculations the outer area has significantly reduced radiation intensity.

The calculations from computer simulations and the measurements from the Bavaria agency for the environmental protection, both found that the intensity of radiation was a factor of 100 higher in the inner area as compared to the outer area. The measurements of all transmitter stations show that the intensity of radiation from the cell phone transmitter station in Naila in the inner area was higher than the other measurement shown in the previous studies of electromagnetic fields from radio, television or radar (14).

The study StSch 4314 from the ECOLOG Institute indicates an association between a vertical and horizontal distance from the transmitter station and expected radiation intensity on the local people (16). The reason for setting a distance of 400m for the differentiation point is partly due to physical considerations, and partly due to the study of Santini *et al.* who chose 300m (10).

Data Gathering

Similar residential streets in the inner area and outer areas were selected at random. The large old people's home in the inner area was excluded from the study because of the age of the inhabitants. Data gathering covered nearly 90% of the local residents, because all four GPs in Naila took part in this study over 10 years. Every team researched the names of the patients from the selected streets that had been ill with tumours since 1994. The condition was that all patients had been living during the entire observation time of 10 years at the same address.

The data from patients was handled according to data protection in an anonymous way. The data was evaluated for gender, age, tumour type and start of illness. All cases in the study were based on concrete results from tissue analysis. The selection of patents for the study was always done in exactly the same way. Self-selection was not allowed. Also the subjective opinion of patients that the radio mast detrimentally affected their health has not affected this study. Since patients with cancer do not keep this secret from GPs, it was possible to gain a complete data set.

Population study

In the areas where data was collected 1,045 residents were registered in 31.12.2003. The registration statistics for Naila at the beginning of the study (1.1.1994) show the number of old people in the inner and outer areas, as shown in Table 1. The average age at the beginning

	female	male	total
Inner area	41.48	38.70	40.21
Outer area	41.93	38.12	40.20
Naila total	43.55	39.13	41.45

Table 1 : Overview of average ages at the beginning of the study in 1994

1994	inner 22.4%	outer 2.8%	Naila total 24.8%
2004	inner 26.3%	outer 26.7%	

Table 2 : Proportion of patients aged over 60

of the study (1.1.1994) in both the inner and outer areas was 40.2 years. In the study period between 1994-2004, 34 new cases of cancer where documented out of 967 patients (Table 3). The study covered nearly 90% of local residents.

The average age of the residents in Naila is one year more than that of the study due to the effects of the old people's home. From the 9,472 residents who are registered in Naila, 4,979 (52.6%) are women and 4,493 (47.4%) are men. According to the register office, in 1.1.1994 in the outer area, the percentage was 45.4% male and 54.5% female, and in the inner area 45.3% male and 54.6% female. The number of people who are over 60 years old is shown in Table 2.

The social differences in Naila are small. Big social differences like in the USA do not exist here. There is also no ethnic diversity. In 1994 in Naila the percentage of foreigners was 4%. Naila has no heavy industry, and in the inner area there are neither high voltage cable nor electric trains.

Results

Results are first shown for the entire 10 year period from 1994 until 2004. Secondly, the last five-year period 1999 to 2004 is considered separately.

Period 1994 to 2004

As a null hypothesis it was checked to see if the physical distance from the mobile transmission mast had no effect on the number cancer cases in the selected population, *ie* that for both the group nearer than 400 metres and the group further than 400 metres the chance of developing cancer was the same. The relative frequencies of cancer in the form of a matrix are shown in Table 3. The statistical test method used on this data was the chi-squared test with Yates's correction. Using this method we obtained the value of 6.27, which is over the critical value of 3.84 for a

Period 1994-2004	Inner area	Outer area	total
new cases of cancers	18	16	34
with no new cancer	302	631	933
total	320	647	967

Table 3 : numbers of patients with and without cancers, 1994-2004

statistical significance of 0.05).

This means the null hypothesis that both groups within the 400-metre radius of the mast and beyond the 400 metre radius, have the same chance of developing cancer, can be rejected with a 95% level of confidence. With a statistical significance of 0.05, an even more significant difference was observed in the rate of new cancer cases between the two groups.

Calculating over the entire study period of 1994 until 2004, based on the incidence matrix (Table 3) we arrive at a relative risk factor of 2.27 (quotient of proportion for each group, *eg* 18/320 in the strongly exposed inner area, against 16/647 in the lower exposed comparison group). If expressed as an odds ratio, the relationship of the chance of getting cancer between strongly exposed and the less exposed is 2.35.

The following results show clearly that inhabitants who live close to transmitter antennas compared to inhabitants who live outside the 400m zone, double their risk of developing cancer. In addition, the average age of developing cancer was 64.1 years in the inner area whereas in the outer area the average age was 72.6 years, a difference of 8.5 years. That means during the 10 year study that in the inner area (within 400 metres of the radio mast) tumours appear at a younger age.

In Germany the average age of developing cancer is approximately 66.5 years, among men it is approximately 66 and among women, 67 (18).

Over the years of the study the time trend for new cancer cases shows a high annual constant value (Table 4). It should be noted that the number of people in the inner area is only half that of the outer area, and therefore the absolute numbers of cases is smaller.

Table 7 shows the types of tumour that have developed in the cases of the inner area.

Period 1994 to 1999

No. of cases of tumours per year of study	inner area: of the 320 people		outer area: of the 647 people	
	total cases	per 1,000	total cases	per 1,000
1994	–	–	I	1.5
1995	–	–	–	–
1996	II	6.3	I	1.5
1997	I	3.1	III	4.6
1998	II	6.3	III	4.6
1999	II	6.3	I	1.5
2000	IIIII	15.6	I	1.5
2001	II	6.3	II	3.1
2002	II	6.3	II	3.1
2003-3/2004	II	6.3	II	3.1

Table 4 : Summary of the total tumours occurring per year (no. and per thousand)

Period 1994-1999	Inner area	Outer area	total
new cases of cancers	5	8	13
with no new cancer	315	639	954
total	320	647	967

Table 5 : numbers of patients with and without cancers, 1994-1999

For the first five years of the radio transmission mast operation (1994-1998) there was no significant increased risk of getting cancer within the inner area as compared to the outer area (Table 5).

Period 1999 to 2004

Under the biologically plausible assumption that cancer caused by detrimental external factors will require a time of several years before it will be diagnosed, we now concentrate on the last five years of the study between 1999 and 2004. At the start of this period the transmitter had been in operation for 5 years. The results for this period are shown in Table 6. The chi-squared test result for this data (with Yates's correction) is 6.77 and is over the critical value of 6.67 (statistical significance 0.01). This means, with 99% level of confidence, that there is a statistically proven difference between development of cancer between the inner group and outer group. The relative risk of 3.29 revealed that there was 3 times more risk of developing cancer in the inner area than the outer area during this time period.

Period 1999-2004	Inner area	Outer area	total
new cases of cancers	13	8	31
with no new cancer	307	639	946
total	320	647	967

Table 6 : numbers of patients with and without cancers, 1999-2004

The odds-ratio 3.38 (VI 95% 1.39-8.25, 99% 1.05-10.91) allows us with 99% confidence to say that the difference observed here is not due to some random statistical effect.

Discussion

Exactly the same system was used to gather data in the inner area and outer areas. The medical chip card, which has been in use for 10 years, enables the data to be processed easily. The four participating GPs examined the illness of 90% of Naila's inhabitants over the last 10 years. The basic data for this study were based on direct examination results of patients extracted from the medical chip cards, which record also the diagnosis and treatment. The study population is (in regards to age, sex and cancer risk) comparable, and therefore statistically neutral. The study deals only with people who have been living permanently at the same address for the entire study period and therefore

Type of tumour (organ)	no of tumours found	total expected	incidence per 100,000	ratio inner. outer
breast	8	5.6	112	5:3
ovary	1	1.1	23	0:1
prostate	5	4.6	101	2:3
pancreas	m 3 f 2	0.6 0.9	14 18	2:1 1:1
bowel	m 4 f 0	3.7 4.0	81 81	2:2 0:0
skin melanoma	m 1 f 0	0.6 0.7	13 14	1:0 0:0
lung	m 3 f 0	3.6 1.2	79 24	2:1 0:0
kidney	m 2 f 1	1.0 0.7	22 15	1:1 1:0
stomach	m 1 f 1	1.2 1.1	27 23	0:1 0:1
bladder	m 1 f 0	2.0 0.8	44 16	0:1 0:0
blood	m 0 f 1	0.6 0.7	14 15	0:0 1:0

Table 7 : Summary of tumours occurring in Naila, compared with incidence expected from the Saarland cancer register

have the same duration of exposure regardless of whether they are in the inner area or outer area.

The result of the study shows that the proportion of newly developing cancer cases was significantly higher ($p<0.05$) among those patients who had lived during the past ten years within a distance of 400 metres from the cellular transmitter site, which has been in operation since 1993, in comparison to people who live further away. Compared to those patients living further away, the patients developed cancer on average 8.5 years earlier. This means the doubled risk of cancer in the inner area cannot be explained by an average age difference between the two groups. That the transmitter has the effect that speeds up the clinical manifestations of the illness and general development of the cancer cannot be ruled out.

In the years 1999-2004, *ie* after five years and more of transmitter operation, the relative risk of getting cancer had trebled for the residents of the area in the proximity of the mast compared to the inhabitants of Naila in the outer area ($p>0.01$). The division into inner area and outer area groups was clearly defined at the beginning of the study by the distance to the cell phone transmission mast. According to physical considerations people living close to cellular transmitter antennas were exposed to heightened transmitted radiation intensity.

Both calculated and empirical measurements revealed that the intensity of radiation is 100 times higher in the inner area compared to the outer area. According to the research StSch 4314 the horizontal and vertical position in regards to the transmitter antenna is the most important criterion in defining the radiation intensity area on inhabitants (16).

The layered epidemiological assessment method used in this study is also used in assessment of possible chemical environmental effects. In this case the layering is performed in regards to the distance from the cell phone transmitter station. Using this method it has been shown that there is a significant difference in probability of developing new cancers depending on the exposure intensity.

The number of patients examined was high enough according to statistical rules that the effects of other factors (such as use of DECT phones) should be normalised across the inner area and outer area groups. From experience the disruption caused by a statistical confounding factor is in the range between 20% and 30%. Such a factor could therefore in no way explain the 300% increase in new cancer cases. If structural factors such as smoking or excessive alcohol consumption are unevenly distributed between the different groups this should be visible from the specific type of cancers to have developed (*ie* lung, pharyngeal or oesophageal). In the study inner area there were two lung cancers (one smoker, one non-smoker), and one in the outer area (a smoker), but no oesophageal cancers. This rate of lung cancer is twice what is statistically to be expected and cannot be explained by a confounding factor alone. None of the patients who developed cancer was from a family with such a genetic propensity.

Through the many years experience of the GPs involved in this study, the social structures in Naila are well known. Through this experience we can say there was no significant social difference in the examined groups that might explain the increased risk of cancer.

The type and number of the diagnosed cancers are shown in Table 7. In the inner area the number of cancers associated with blood formation and tumour-controlling endocrine systems (pancreas), were more frequent than in the outer area (77% inner area and 69% outer area).

From Table 7, the relative risk of getting breast cancer is significantly increased to 3.4. The average age of patients that developed breast cancer in the inner area was 50.8 years. In comparison, in the outer area the average age was 69.9 years, approximately 20 years less. In Germany the average age for developing breast cancer is about 63 years. The incidence of breast cancer has increased from 80 per 100,000 in the year 1970 to 112 per 100,000 in the year 2000. A possible question for future research is whether breast cancer can be used as a 'marker cancer' for areas where there is high contamination from electromagnetic radiation. The report of Tynes *et al.* described an increased risk of breast cancer in Norwegian female radio and telegraph operators (20).

To further validate the results the data gathered were compared with the Saarland cancer register (21). In this register all newly developed cancers cases since 1970 are recorded for each Bundesland. These data are accessible via the Internet. Patents that suffer two separate tumours were registered twice, which increases the overall incidence up to 10%. In this

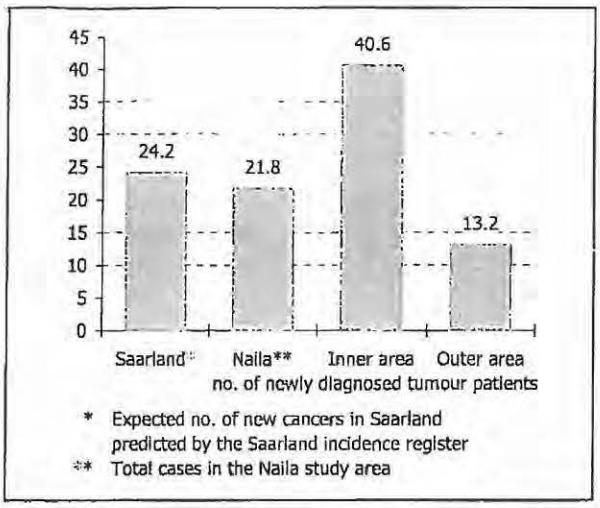

Fig. 3 : Number of new cancer cases 1999 to 2004, adjusted for age and gender, calculated for the 5,000 patient years

register there is no location-specific information, for instance proximity to cell phone transmission masts. The data in the cancer register therefore reflect no real control group but rather the effect of the average radiation on the total population.

From the Saarland cancer register for the year 2000 the incidence of new cancer cases was 498 per 100,000 for men and 462 per 100,000 for women. When adjusted for age and sex one would expect a rate of between 480 and 500 per 100,000 in Naila. For the years 1999 to 2004 there were 21 new cases of cancer among 967 patients. The expected number was 24 cases per 1,000 patients.

The results of the study are shown graphically in Fig. 3. The bars of the chart represent the number of new cancer cases per 1,000 patients in the separate areas, over the five years (bars 2 to 4). The first bar represents the expected number from the Saarland cancer register.

In spite of a possible underestimation, the number of newly developed cancer cases in the inner area is more than the expected number taken from the cancer register, which represents the total population being irradiated. The group who had lived during the past five years within a distance of 400 m from the cellular transmitter have a two times higher risk of developing cancer than that of the average population. The relative risk of getting cancer in the inner area compared with the Saarland cancer register is 1.7 (see to Table 7).

Conclusion

The result of this retrospective study in Naila shows that the risk of newly developing cancer was three times higher among those patients who had lived during past ten years (1994-2004), within a distance of 400m from the cellular transmitter, in comparison to those who had lived further away.

Cross-sectional studies can be used to provide the decisive empirical information to identify real problems. In the 1960s just three observations of birth deformities were enough to uncover what is today an academically indisputable Thalidomide problem.

This study, which was completed without any external financial support is a pilot project. Measurements of individual exposure as well as the focused search for further side effects would provide a useful extension to this work, however such research would need the appropriate financial support.

The concept of this study is simple and can be used everywhere, where there it a long-term electromagnetic radiation from a transmitting station.

The results presented are a first concrete epidemiological sign of a temporal and spatial connection between exposure to GSM base station radiation and cancer disease.

These results are, according to the literature relating to high frequency electromagnetic fields, not only plausible and possible, but also likely.

From both an ethical and legal standpoint it is necessary to immediately start to monitor the health of the residents living in areas of high radio frequency emissions from mobile telephone base stations with epidemiological studies. This is necessary because this study has shown that it is no longer safely possible to assume that there is no causal link between radio frequency transmissions and increased cancer rates.

Acknowledgements

Our thanks go to all those involved in developing this study, in particular, Herrn Professor Frentzel-Beyme for his advice on all the epidemiological questions.

(Received 14.09.2004; Accepted 08.10.2004)

Footnotes

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Kontakt:

Dr. med. Klaus Uwe Hagen
Birgitt Lucas
Peter Vogel
Dr. med.Helmut Voit

Korrespondenz:
Dr. med.Horst Eger
Marktplatz 16
95119 Naila
Tel.: 09282-1304
horst.eger@arcormail.de

Re: 10 factory lane application
gerard neil
to:
Planning
2014/08/27 06:17 PM
Hide Details
From: gerard neil <[redacted]
To: Planning <planning@stjohns.ca>
History: This message has been forwarded.

Thank you for your response - we are not so interested in the aesthetic result, as the building is quite ugly already, and what can one do about that?
We are seriously interested in the 'emissions' as there are many cases of physical health issues as a result of living close to these devices.
Thank you, I will call to arrange a viewing,
Gerard Neil

On Wed, Aug 27, 2014 at 4:12 PM, Planning <planning@stjohns.ca> wrote:

Mr. Neil

I apologize for the delayed response on your request. Unfortunately, due to privacy laws, we are unable to provide a copy of this Application, however you are welcome to come to our office and view the Application file. We are located on the 3rd Floor of City Hall and are open Monday-Friday 9:00 a.m. - 4:30 p.m. Please call me at 576-8220 to arrange a time.

Attached, I have included an artist rendition of what the Antenna will look like for your information.

Donna

Donna L. Mullett
WPIII
Planning, Development & Engineering
City of St. John's
p: 576-8220
f: 576-8625

From: gerard neil [redacted]>
To: planning@stjohns.ca
Date: 2014/08/21 10:46 AM
Subject: Re: 10 factory lane application

Standing by to hear more bout this

thanks!
gerard

On Sun, Aug 17, 2014 at 11:04 AM, gerard neil [redacted] wrote:
This application (Factory lane/Bell) has to do with a building directly across the street from me and I wish to view it.
your website provides no information regarding what sort of antennae, and what the emissions are.
Please forward ASAP so I can make a statement on this application
Gerard Neil
St. John's

REPORT
Finance and Administration Committee

Tuesday, August 12, 2014

IN ATTENDANCE:

Councillor Danny Breen, Chairperson
Councillor Bruce Tilley
Councillor Bernard Davis
Councillor Jonathan Galgay
Councillor Dave Lane
Councillor Wally Collins
Mr. Robert Bishop, Deputy City Manager, Financial Management
Mr. Paul Mackey, Deputy City Manager, Public Works
Mr. Dave Blackmore, Deputy City Manager, Planning, Development & Engineering
Ms. Jill Brewer, Deputy City Manager, Community Services
Mr. Sean Janes, City Internal Auditor
Ms. Maureen Harvey, Senior Legislative Assistant

a. Memorandum dated July 25, 2014 from the Deputy City Manager of Financial Management re: Interim Financial Statements to June 30, 2014

The Deputy City Manager presented the Committee with the interim financial statements to June 30, 2014 along with a projection to year end.

He reported that there is a material overage (positive variation) on the revenue side in Grants in Lieu of Taxes. This is because of significantly higher Federal property values generally and more specifically, the completion of the new DND facility in Pleasantville. "Water sales and tax" are also well over budget, primarily because of higher water consumption by other municipalities. The large apparent drop in Non-Profit Housing subsidy is just a matter of the timing of the receipt of funds.

On the expenditure side, there are some large variations in the various expenditure groupings but no individually significant variances except for the $3 million over-expenditure in snowclearing which was to be expected. Most other apparent variances are attributable to timing (invoices not processed and posted to the end of June) or in some cases such as Protective Inspections, budget and actual do not match up because of staff restructuring between budget units subsequent to the finalization of the budget for 2014.

Projection to Year End
The projection to year end is built on the June 30th statements and reflects adjustments for processing as well as variances which we expect to follow on through the year. Overall, we anticipate a surplus on operations in excess of $3.5 million, largely attributable to the boost in Grants in Lieu of Taxes revenue as noted above.

A copy of the financial statements is attached to this report.

Councillor Danny Breen
Chairperson

MEMORANDUM

Date: August 7, 2014

To: Chairman and Members
Finance and Administration Standing Committee

From: Robert G. Bishop, C.A.
Deputy City Manager,
Financial Management

Re: Interim Financial Statements to June 30, 2014

Attached for your information are interim financial statements for the six months ended June 30, 2014 along with a projection to year end.

Six Months Ended June 30, 2014

There is a material average (positive variation) on the revenue side in Grants in Lieu of Taxes. This is because of significantly higher Federal property values generally and more specifically, the completion of the new DND facility in Pleasantville. "Water sales and tax" are also well over budget, primarily because of higher water consumption by other municipalities. The large apparent drop in Non-Profit Housing subsidy is just a matter of the timing of the receipt of funds.

On the expenditure side, there are some large variations in the various expenditure groupings but no individually significant variances except for the $3 million over-expenditure in snow-clearing which was to be expected. Most other apparent variances are attributable to timing (invoices not processed and posted to the end of June) or in some cases such as Protective Inspections, budget and actual do not match up because of staff restructuring between budget units subsequent to the finalization of the budget for 2014.

Projection to Year End

The projection to year end is built on the June 30th. statements and reflects adjustments for processing as well as variances which we expect to follow on through the year. Overall, we

anticipate a surplus on operations in excess of $3.5 million, largely attributable to the boost in Grants in Lieu of Taxes revenue as noted above.

Robert G. Bishop, C.A.
Deputy City Manager,
Financial Management

RGB/fc
Attach.

City of St. John's
Report on Revenue and Expenditure
Executive Summary

June 30, 2014

	Actual	Estimates	Variance	Variance
Revenue				
Taxation	$106,279,478	$106,512,248	(232,770)	-0.2%
Grants other governments	11,772,548	12,238,941	(466,393)	-3.8%
Grants in lieu of taxes	8,575,452	4,685,000	3,890,452	83.0%
Sales of goods & services	10,195,488	9,701,350	494,138	5.1%
Other revenue own sources	6,066,129	5,199,260	866,869	16.7%
Other transfers	115,495	0	115,495	#N/A
Total Revenue	**$143,004,590**	**$138,336,799**	**$4,667,791**	**3.4%**
Expenditure				
General government services	$15,557,476	$17,706,780	(2,149,304)	-12.1%
Protective services	12,968,614	12,968,092	522	0.0%
Transportation services	26,187,928	22,971,389	3,216,539	14.0%
Environmental health services	29,569,202	32,809,268	(3,240,066)	-9.9%
Environmental development services	5,040,773	5,529,142	(488,369)	-8.8%
Recreation and cultural services	8,179,320	9,158,288	(978,968)	-10.7%
Fiscal services	14,281,492	14,296,374	(14,882)	-0.1%
Transfers to reserves & other funds	-2,820,371	-2,500,000	(320,371)	12.8%
	108,964,434	112,939,333	(3,974,899)	-3.5%
Payroll Costs	749,457	-63,864	813,321	-1273.5%
Fleet - mechanical	1,264,120	729,493	534,627	-73.3%
Total Expenditure	**$110,978,011**	**$113,604,962**	**-$2,626,951**	**2.3%**
Net Surplus (Deficit)	**32,026,579**	**24,731,837**	**7,294,742**	

CITY OF ST. JOHN'S
REVENUE REPORT

	Y.T.D. Budget JUNE	Y.T.D. Actual JUNE	Variance Favourable (Unfavourable)	% Variance
TAXATION:				
1112 RESIDENTIAL REALTY	41,800,000	41,876,200	76,200	0.18%
1121 BUSINESS REALTY	30,100,000	29,637,721	-462,279	-1.54%
1400 BUSINESS OCCUPANCY		-24,880	-24,880	0.00%
4410 WATER SALES & TAX	25,512,248	26,759,202	1,246,954	4.89%
1940 ACCOMMODATION TAX	1,800,000	954,492	-845,508	-46.97%
1991 UTILITY TAX	7,300,000	7,076,743	-223,257	-3.06%
	106,512,248	**106,279,478**	**-232,770**	**-0.22%**
GRANTS IN LIEU OF TAXES:				
2100 GOVT. OF CANADA	3,100,000	6,326,878	3,226,878	104.09%
2200 GOVT.CANADA AGENCIES	535,000	650,000	115,000	21.50%
2300 WATER TAX GRANT	1,050,000	1,598,574	548,574	52.25%
2400 GOVT.NFLD.AGENCIES			0	0.00%
	4,685,000	**8,575,452**	**3,890,452**	**83.04%**
SALES GOODS & SERVICES:				
4100 GENERAL GOVERNMENT	872,256	730,975	-141,281	-16.20%
4300 TRANSPORTATION	1,153,914	1,151,754	-2,160	-0.19%
4400 ENVIRONMENTAL HEALTH	358,014	852,466	494,452	138.11%
4435 TIPPING FEES	6,227,520	6,502,201	274,681	4.41%
4700 RECREATION	848,978	779,590	-69,388	-8.17%
4900 OTHER GENERAL	240,668	178,502	-62,166	-25.83%
	9,701,350	**10,195,488**	**494,138**	**5.09%**
OTHER REVENUE OWN SOURCES:				
5120 BUSINESS LICENCES	77,685	122,297	44,612	57.43%
5170 CONSTRUCTION PERMITS	1,709,334	1,940,958	231,624	13.55%
5200 FINES	1,128,726	1,100,897	-27,829	-2.47%
5300 RENTS & CONCESSIONS	1,473,326	1,729,756	256,430	17.40%
5500 INVESTMENT INTEREST	10,191	266,355	256,164	2513.63%
5600 INTEREST TAX ARREARS	799,998	905,866	105,868	13.23%
	5,199,260	**6,066,129**	**866,869**	**16.67%**
GRANTS OTHER GOVERNMENTS:				
7530 RECOVERY DEBT CHARGES	9,256,427	9,146,140	-110,287	-1.19%
7550 REAL PROGRAM GRANTS	90,000	238,236	148,236	164.71%
7555 NPH SUBSIDITY	520,150	56,165	-463,985	-89.20%
7598 MUNICIPAL OPR. GRANT			0	0.00%
7682 RENTAL HOUSING			0	0.00%
7110 FEDERAL GAS TAX REBATE	2,091,426	2,091,426	0	0.00%
7100 OTHER GRANTS	66,738	225,884	159,146	238.46%
7107 CMHC MORTGAGE SUBSIDIT	214,200	14,697	-199,503	-93.14%
	12,238,941	**11,772,548**	**-466,393**	**-3.81%**
OTHER TRANSFERS:				
9201 ASSESSMENTS		115,495	115,495	0.00%
7999 TRANSFER TO RESERVES			0	0.00%
9300 TRANSFER TO RESERVES			0	0.00%
	0	**115,495**	**115,495**	**0.00%**
TOTAL REVENUE	**$138,336,799**	**$143,004,590**	**4,667,791**	**3.37%**

CITY OF ST. JOHN'S
EXPENDITURE REPORT

	Y-T-D Budget JUNE	Y-T-D Actual JUNE	Favorable (Unfavorable)	% Variance
GENERAL GOVERNMENT:				
GENERAL ADMINISTRATIVE:				
1111 MAYOR AND COUNCIL	355,777	359,392	-3,615	-1.02%
1112 MAYOR'S OFFICE	5,940	9,988	-4,048	-68.15%
1115 CIVIC EVENTS & RECEPTIONS	91,906	75,751	16,155	17.58%
2531 EMERGENCY PREPAREDNESS	65,809	57,236	8,573	13.03%
1210 BUISNESS PLANNING & OPERATIONAL REVIEW			0	#N/A
1211 ADMINISTRATION - STRATEGY & ENGAGEMEN	241,485	77,767	163,718	67.80%
1212 ADMINISTRATION - ADMIN. SERVICES	236,909	269,817	-32,908	-13.89%
1213 PERSONNEL AND LABOUR RELATIONS	237,452	158,591	78,861	33.21%
1214 BENEFITS ADMINISTRATION	101,438	96,004	5,434	5.36%
1215 CITY MANAGER'S OFFICE	189,717	210,130	-20,413	-10.76%
1216 EMPLOYEE WELLNESS	397,924	374,304	23,620	5.94%
1217 EMPLOYEE DEVELOPMENT	235,842	178,468	57,374	24.33%
1218 EMPLOYEE RELATIONS	411,454	344,127	67,327	16.36%
1219 569 HR ADMINISTRATION	166,387	236,721	-70,334	-42.27%
1220 LEGAL SERVICES	470,899	383,480	87,419	18.56%
1221 ADMINISTRATION - FINANCE	239,548	332,264	-92,716	-38.70%
1222 FINANCIAL SERVICES	672,461	656,752	15,709	2.34%
1223 BUDGETARY SERVICES	168,179	163,541	4,638	2.76%
1224 ASSET REPORTING	46,661	45,954	707	1.52%
1231 ASSESSMENT	715,742	694,343	21,399	2.99%
1241 REVENUE ACCOUNTING	602,576	574,417	28,159	4.67%
1250 PROPERTY MANAGEMENT	233,572	216,483	17,089	7.32%
1251 OFFICE SERVICES	465,683	549,821	-84,138	-18.07%
1252 MAINTENANCE OF CITY HALL	367,606	324,383	43,223	11.76%
1253 ELECTRICAL MAINTENANCE	338,485	312,376	26,109	7.71%
1254 MAINTENANCE CITY HALL ANNEX	107,147	82,359	24,788	23.13%
1255 BUILDING & FACILITY MAINTENANCE	192,668	4,577	188,091	97.62%
1256 MAINTENANCE FIRE DEPARTMENT	167,085	113,009	54,076	32.36%
1257 MAINTENANCE RAILWAY COASTAL MUSEUM	104,199	92,897	11,302	10.85%
1258 MTCE CIVIC # 245 FRESHWATER RD	105,043	127,092	-22,049	-20.99%
1259 MAINTENANCE PROPERTY ASSESSMENT BUIL	29,001	20,811	8,190	28.24%
1261 PURCHASING	321,096	318,075	3,021	0.94%
1262 STORES-INVENTORY	385,879	472,005	-86,126	-22.32%
1268 ADMIN. CORPORATE SERVICES	145,293	115,466	29,827	20.53%
1269 INTERNAL AUDIT	128,775	118,891	9,884	7.68%
1270 CORPORATE COMMUNICATIONS	459,848	338,264	121,584	26.44%
1272 INFORMATION SERVICES	2,142,382	1,879,583	262,799	12.27%
1274 SERVICE CENTRE	859,512	816,044	43,468	5.06%
	12,207,380	**11,201,183**	**1,006,197**	**8.24%**
PENSIONS & BENEFITS:				
1290 PENSIONS	650,621	624,439	26,182	4.02%
1297 LUMPSUM SICK LEAVE	399,996	546,498	-146,502	-36.63%
	1,050,617	**1,170,937**	**-120,320**	**-11.45%**
ENGINEERING:				
1311 ADMIN. - ENG. & PLANNING		108,420	-108,420	#N/A
1313 DEVELOPMENT CONTROL	697,329	362,297	335,032	48.05%
1314 SURVEYING	263,447	251,945	11,502	4.37%
1315 TRAFFIC & TRANSPORTATION	1,707,505	748,959	958,546	56.14%
1316 STENOGRAPHIC - CLERICAL SUPPORT	359,043	149,001	210,042	58.50%
1317 ENVIRONMENTAL INITIATIVES		901	-901	#N/A
1318 LAND INFORMATION SYSTEMS	622,823	568,840	53,983	8.67%

CITY OF ST. JOHN'S
EXPENDITURE REPORT

	Y-T-D Budget JUNE	Y-T-D Actual JUNE	Favorable (Unfavorable)	% Variance
1319 CONSTRUCTION	670,991	634,186	36,805	5.49%
	4,321,138	**2,824,549**	**1,496,589**	**34.63%**
OTHER GENERAL GOVERNMENT:				
1931 LIABILITY INSURANCE	127,645	360,807	-233,162	-182.66%
1995 MUNICIPAL GENERAL ELECTIONS			0	#N/A
	127,645	**360,807**	**-233,162**	**-182.66%**
TOTAL GENERAL GOV'T	**17,706,780**	**15,557,476**	**2,149,304**	**12.14%**
PROTECTIVE SERVICES:				
FIRE & TRAFFIC:				
2141 TRAFFIC ENFORCEMENT	1,398,906	1,304,684	94,222	6.74%
2142 CROSSING GUARD PROGRAM	64,338	39,698	24,640	38.30%
2491 FIRE PROTECTION	8,830,455	8,887,413	-56,958	-0.65%
2498 MAINTENANCE PROPERTY MANAGEMENT MAI	35,412	191,692	-156,280	-441.32%
	10,329,111	**10,423,487**	**-94,376**	**-0.91%**
PROTECTIVE INSPECTIONS:				
2921 ADMINISTRATIVE - BUILDING DEPT.	336,179	206,542	129,637	38.56%
2922 PLANS & TECHNICAL REVIEW	1,016,644	350,123	666,521	65.56%
2923 ELECTRICAL INSPECTION	365,126	341,028	24,098	6.60%
2924 PLUMBING INSPECTION	160,230	152,996	7,234	4.51%
2925 STENOGRAPHIC-CLERICAL		194,133	-194,133	#N/A
2926 PLUMBING MAINTENANCE	43,296	48,725	-5,429	-12.54%
2927 BUILDING INSPECTIONS & MIMIUMN STANDARDS		575,012	-575,012	#N/A
2929 TAXI & BY-LAW INSPECTIONS	100,206	91,927	8,279	8.26%
	2,021,681	**1,960,486**	**61,195**	**3.03%**
OTHER PROTECTIVE SERVICES:				
2931 ANIMAL & PEST CONTROL	568,986	543,476	25,510	4.48%
2932 ANIMAL CONTROL SHELTER MTCE.	48,314	41,165	7,149	14.80%
	617,300	**584,641**	**32,659**	**5.29%**
TOTAL PROTECTIVE SERVICES	**12,968,092**	**12,968,614**	**-522**	**0.00%**
TRANSPORTATION SERVICES:				
STREETS DEPARTMENT:				
3011 ADMINISTRATION PUBLIC WORKS	601,799	431,915	169,884	28.23%
3211 ADMIN. - STREETS & PARKS	1,037,679	1,315,946	-278,267	-26.82%
3221 MAINTENANCE OF ROADS & SIDEWALKS	1,993,163	2,725,915	-732,752	-36.76%
3231 SNOW CLEARING	7,744,021	10,843,153	-3,099,132	-40.02%
3241 WORKS DEPOT MAINTENANCE	709,919	853,156	-143,237	-20.18%
3242 MTCE OF ASPHALT RECYCLING FACILITY	7,854	7,649	205	2.61%
3252 MAINTENANCE OF TRAFFIC SIGNS & LIGHTS		230,527	-230,527	#N/A
3253 STREET MARKINGS		403,591	-403,591	#N/A
3262 STREET CLEANING BY HAND	91,947	12,464	79,483	86.44%
	12,186,382	**16,824,316**	**-4,637,934**	**-38.06%**
OTHER TRANSPORTATION SERVICES:				
3521 PARKING METERS	551,178	39,430	511,748	92.85%
3561 STREET LIGHTING	2,212,500	1,766,870	445,630	20.14%
3591 SUBSIDY TO METROBUS	6,929,703	6,910,212	19,491	0.28%
3592 PARA-TRANSIT SYSTEM	1,091,626	647,100	444,526	40.72%
	10,785,007	**9,363,612**	**1,421,395**	**13.18%**
TOTAL TRANS. SERVICES	**22,971,389**	**26,187,928**	**-3,216,539**	**-14.00%**

CITY OF ST. JOHN'S
EXPENDITURE REPORT

	Y-T-D Budget JUNE	Y-T-D Actual JUNE	Favorable (Unfavorable)	% Variance
ENVIRONMENTAL HEALTH:				
WATER DEPARTMENT:				
4111 ADMIN. - ENVIRONMENTAL SERVICES	1,107,282	1,054,413	52,869	4.77%
4121 PHLP WATER TREATMENT PLANT	895,788	16,651	879,137	98.14%
4122 WINSOR LAKE TREATMENT PLANT	3,694,454	3,336,535	357,919	9.69%
4123 REGIONAL WATER SYSTEM	8,800,980	8,451,016	349,964	3.98%
4124 MTCE. PVR/BOOSTER STATIONS	229,789	165,481	64,308	27.99%
4131 MTCE. OF WATER & SEWER SERVICES	4,037,843	3,447,091	590,752	14.63%
4132 WATER METERING	188,925	152,254	36,671	19.41%
	18,955,061	**16,623,441**	**2,331,620**	**12.30%**
SEWER DEPARTMENT:				
4225 WASTE WATER TREATMENT PLANT	4,202,981	3,667,447	535,534	12.74%
4226 SEWER PUMP STATIONS	338,185	364,295	-26,110	-7.72%
	4,541,166	**4,031,742**	**509,424**	**11.22%**
SANITARY DEPARTMENT:				
4321 GARBAGE COLLECTION	3,175,321	3,747,790	-572,469	-18.03%
4322 WASTE DIVERSION PUBLIC AWARENESS	84,437	91,396	-6,959	-8.24%
4323 CURB SIDE RECYCLING PROGRAM		1,334	-1,334	#N/A
4331 GARBAGE & LITTER DISPOSAL	2,923,613	1,803,052	1,120,561	38.33%
4332 BLDG. MTCE. ROBIN HOOD BAY	315,855	89,612	226,243	71.63%
4333 MATERIALS RECOVERY FACILITY	917,005	648,387	268,618	29.29%
4334 RESIDENTAL DROP OFF FACILITY	415,026	249,436	165,590	39.90%
4335 EASTERN WASTE MGNT. REGIONAL SERVICE	1,481,784	2,283,012	-801,228	-54.07%
	9,313,041	**8,914,019**	**399,022**	**4.28%**
TOTAL ENVIRON. HEALTH	**32,809,268**	**29,569,202**	**3,240,066**	**9.88%**
ENVIRONMENTAL DEVELOPMENT:				
PLANNING :				
6113 PLANNING & DEVELOPMENT	454,706	527,949	-73,243	-16.11%
6118 DOWNTOWN REVITALIZATION	125,000	124,923	77	0.06%
6211 ADMINISTRATION - COMMUNITY SERVICES	355,712	151,771	203,941	57.33%
	935,418	**804,643**	**130,775**	**13.98%**
HOUSING AND REAL ESTATE:				
6330 REAL ESTATE - LEGAL	122,906	114,652	8,254	6.72%
6341 REAL ESTATE	16,700	1,385	15,315	91.71%
6342 RENTAL HOUSING PROJECTS	97,272	106,807	-9,535	-9.80%
6343 TRANSFERS ACCOMMODATION TAX	624,996	625,000	-4	0.00%
6360 NON-PROFIT HOUSING	2,230,385	2,005,796	224,589	10.07%
6391 NON-PROFIT HOUSING ADMINISTRATION	142,087	134,110	7,977	5.61%
6392 NON-PROFIT HOUSING MAINTENANCE	329,399	297,509	31,890	9.68%
	3,563,745	**3,285,259**	**278,486**	**7.81%**
TOURISM & ECONOMIC DEVELOPMENT:				
6611 ADMINISTRATION ECONOMIC DEVELOPMENT	311,269	268,205	43,064	13.83%
6612 TOURISM DEVELOPMENT	453,915	432,951	20,964	4.62%
6613 VISITOR'S SERVICES	71,471	50,110	21,361	29.89%
6614 MEETINGS & CONVENTIONS		19,025	-19,025	#N/A

CITY OF ST. JOHN'S
EXPENDITURE REPORT

	Y-T-D Budget JUNE	Y-T-D Actual JUNE	Favorable (Unfavorable)	% Variance
6616 ECONOMIC DEVELOPMENT		14,699	-14,699	#N/A
6617 TOURISM RESEARCH	159,454	143,696	15,758	9.88%
6618 PROJECT & EVENT COORDINATION	33,870	22,185	11,685	34.50%
6619 BUSINESS SERVICES			0	#N/A
6620 MOVED TO 1270			0	#N/A
6624 MTCE. GENTARA BLDG.			0	#N/A
6625 MAINTENANCE - QUIDI VIDI			0	#N/A
	1,029,979	**950,871**	**79,108**	**7.68%**
TOTAL ENVIR DEVELOPMENT	**5,529,142**	**5,040,773**	**488,369**	**8.83%**
RECREATION & PARKS:				
PARKS DIVISION:				
7121 MAINTENANCE OF MUNICIPAL PARKS	854,317	710,047	144,270	16.89%
7122 MTCE. OF PASSIVE OPEN SPACES	1,072,764	536,143	536,621	50.02%
7123 MAINTENANCE OF SPORTS FACILITIES	278,338	251,686	26,652	9.58%
7124 MAINTENANCE OF PLAYGROUNDS	371,896	411,622	-39,726	-10.68%
7125 MTCE. OF BUCKMASTERS REC. CENTRE	48,813	43,232	5,581	11.43%
7126 HORTICULTURAL MAINTENANCE	489,205	353,940	135,265	27.65%
7127 MAINTENANCE OF ROTARY PARK	36,671	25,815	10,856	29.60%
7130 MAINTENANCE OF H.G.R. MEWS CENTRE	103,265	122,061	-18,796	-18.20%
7131 AQUATIC MAINTENANCE - PARKS	97,834	80,940	16,894	17.27%
7133 MTCE. ROTAY PARK CHALET	21,433	16,111	5,322	24.83%
7134 MTCE. SPORTS BUILDINGS	113,624	94,556	19,068	16.78%
7135 SNOW CLEARING STEPS AND R.O.W.	345,292	367,542	-22,250	-6.44%
7136 MTCE. SHEA HEIGHTS COMMUNITY CENTER	35,456	20,238	15,218	42.92%
7137 WEDGEWOOD PARK FAC. MTCE.	61,049	54,711	6,338	10.38%
7138 MTCE. KILBRIDE COMMUNITY CENTER	35,490	30,711	4,779	13.47%
7139 MTCE SOUTHLANDS COMMUNITY CENTER	33,944	11,779	22,165	65.30%
7141 ANNA TEMPLETON CENTER - MTCE.	9,680	5,409	4,271	44.12%
7225 BOWRING BARK BLDG. MAINTENANCE	67,046	48,006	19,040	28.40%
	4,076,117	**3,184,549**	**891,568**	**21.87%**
RECREATION:				
7301 RECREATION ADMINISTRATION	390,769	484,361	-93,592	-23.95%
7305 FAMILY & LEISURE SERVICES	684,688	666,203	18,485	2.70%
7311 COMMUNITY DEVELOPMENT ADMINISTRATION	490,019	415,286	74,733	15.25%
7315 RECREATION INFORMATION SERVICES	59,178	9,500	49,678	83.95%
7321 OPERATIONS SUMMER REC. PROGRAM	69,535	13,280	56,255	80.90%
7322 OPERATION OF BOWRING PARK POOL	17,189	5,913	11,276	65.60%
7324 FACILITIES DIVISION ADMINISTRATION	236,972	237,133	-161	-0.07%
7325 OPERATION OF H.G.R. MEWS CENTRE	282,861	316,983	-34,122	-12.06%
7329 H.G.R. MEWS CENTRE - AQUATICS & FITNESS	279,470	279,736	-266	-0.10%
7330 GOULDS RECREATION ASSOCIATION	160,860	120,510	40,350	25.08%
7331 WEDGEWOOD PARK FACILITY OPERATIONS	173,130	188,742	-15,612	-9.02%
7332 WEDGEWOOD PARK - AQUATICS & FITNESS P	212,152	209,836	2,316	1.09%
7333 SENIORS PROGAMS & SERVICES	59,901	45,755	14,146	23.62%
7334 OPERATION OF BANNERMAN PARK POOL	10,118		10,118	100.00%
7335 OTHER FACILITY OPERATIONS	77,036	66,078	10,958	14.22%
7336 SHEA HEIGHTS COMMUNITY CENTRE	78,126	78,920	-794	-1.02%
7337 SOUTHLANDS COMMUNITY CENTER	67,777	14,045	53,732	79.28%
7338 KILBRIDE COMMUNITY CENTRE	84,456	81,203	3,253	3.85%
7341 SPORT AND COMMUNICATION	373,086	285,238	87,848	23.55%
	3,807,323	**3,518,722**	**288,601**	**7.58%**

CITY OF ST. JOHN'S
EXPENDITURE REPORT

	Y-T-D Budget JUNE	Y-T-D Actual JUNE	Favorable (Unfavorable)	% Variance
OTHER RECREATIONAL & CULTURAL SERVICES:				
7445 CIVIC CENTRE CORPORATION			0	#N/A
7551 GRANTS AND SUBSIDIES TO ORGANIZATIONS	617,500	917,177	-299,677	-48.53%
7911 MUNICIPAL ARCHIVES	127,608	113,233	14,375	11.26%
7910 CULTURAL DEVELOPMENT	298,725	249,359	49,366	16.53%
7912 RAILWAY COASTAL MUSEUM	231,015	196,280	34,735	15.04%
	1,274,848	**1,476,049**	**-201,201**	**-15.78%**
TOTAL RECREATION & CULTURAL	**9,158,288**	**8,179,320**	**978,968**	**10.69%**
FISCAL & TRANSFERS:				
DEBT CHARGES:				
8111 SHORT TERM BORROWINGS	90,000	24,503	65,497	72.77%
8121 LONG TERM DEBT CHARGES	14,329	14,329	0	0.00%
8131 DEBENTURE DEBT CHARGES	14,127,045	14,182,585	-55,540	-0.39%
8191 OTHER DEBT CHARGES	65,000	60,075	4,925	7.58%
TOTAL FISCAL SERVICES	**14,296,374**	**14,281,492**	**14,882**	**0.10%**
OTHER TRANSFERS:				
8211 ALLOWANCE FOR DOUBTFUL ACCOUNTS		18,645	-18,645	#N/A
8213 SNOW AND ICE RESERVE			0	#N/A
8990 CONTRIBUTIONS TO CAPITAL FUND	-2,500,000	-2,839,016	339,016	-13.56%
9002 DEFICIT FUNDING			0	#N/A
9300 HARBOUR CLEAN-UP RESERVE			0	#N/A
0000 WATER TREATMENT RESERVE			0	#N/A
TOTAL OTHER TRANSFERS	**-2,500,000**	**-2,820,371**	**320,371**	**-12.81%**
TOTAL EXPENDITURE:	**112,939,333**	**108,964,434**	**3,974,899**	**3.52%**
TRANSFERS TO OTHER DEPARTMENTS:				
PAYROLL COSTS:				
1295 EMPLOYEE FRINGE BENEFITS	-63,864	749,457	-813,321	1273.52%
MECHANICAL:				
3111 ADMINISTRATION - MECHANICAL DEPT.	733,046	776,138	-43,092	-5.88%
3121 VEHICLE & EQUIPMENT MAINTENANCE	4,179,567	4,793,001	-613,434	-14.68%
3123 ROBIN HOOD BAY HEAVY EQUIPMENT	316,880	321,548	-4,668	-1.47%
3129 VEHICLE FLEET RENTAL	-4,500,000	-4,626,567	126,567	-2.81%
TOTAL MECHANICAL	**729,493**	**1,264,120**	**-534,627**	**-73.29%**
TOTAL EXPENDITURE:	**$113,604,962**	**$110,978,011**	**2,626,951**	**2.31%**

City of St. John's
Report on Revenue and Expenditure
Executive Summary

	Budget 2014	Projected To Year End	Variance Favorable (Unfavorable)
Revenue			
Taxation	$205,724,601	$205,241,831	(482,770)
Grants other governments	26,794,275	26,972,882	178,607
Grants in lieu of taxes	5,735,000	9,625,452	3,890,452
Sales of goods & services	19,366,516	19,560,654	194,138
Other revenue own sources	10,471,509	11,338,378	866,869
Other transfers	4,194,778	4,310,273	115,495
Total Revenue	**$272,286,679**	**$277,049,470**	**$4,762,791**
Expenditure			
General government services	$34,879,741	$33,320,438	1,559,304
Protective services	29,403,800	29,254,322	149,478
Transportation services	52,627,031	54,393,570	(1,766,539)
Environmental health services	71,094,353	68,254,287	2,840,066
Environmental development services	11,369,399	11,031,030	338,369
Recreation and cultural services	19,886,206	19,407,238	478,968
Fiscal services	31,127,282	31,112,400	14,882
Transfers to reserves & other funds	16,964,952	16,644,581	320,371
	267,352,764	263,417,867	3,934,897
Payroll Costs	6,073,675	6,886,996	(813,321)
Fleet - mechanical	-1,139,760	2,994,868	(4,134,628)
Total Expenditure	**$272,286,679**	**$273,299,731**	**-$1,013,052**
Net Surplus (Deficit)	**0**	**3,749,740**	**3,749,740**

CITY OF ST. JOHN'S
REVENUE PROJECTION
June 30, 2014

	Approved Budget 2014	Projected To Year End	Variance
TAXATION:			
1112 RESIDENTIAL REALTY	$83,600,000	83,676,200	76,200
1121 BUSINESS REALTY	$60,200,000	59,737,721	-462,279
1400 BUSINESS OCCUPANCY	$0	-24,880	-24,880
4410 WATER SALES & TAX	$51,024,601	51,021,555	-3,046
1940 ACCOMMODATION TAX	$3,600,000	3,754,492	154,492
1991 UTILITY TAX	$7,300,000	7,076,743	-223,257
	205,724,601	**205,241,831**	**-482,770**
GRANTS IN LIEU OF TAXES:			
2100 GOVT. OF CANADA	$3,100,000	6,326,878	3,226,878
2200 GOVT.CANADA AGENCIES	$535,000	650,000	115,000
2300 WATER TAX GRANT	$2,100,000	2,648,574	548,574
2400 GOVT.NFLD.AGENCIES		0	0
	5,735,000	**9,625,452**	**3,890,452**
SALES GOODS & SERVICES:			
4100 GENERAL GOVERNMENT	$1,745,960	1,604,679	-141,281
4300 TRANSPORTATION	$2,307,916	2,305,756	-2,160
4400 ENVIRONMENTAL HEALTH	$666,046	860,498	194,452
4435 TIPPING FEES	$12,455,052	12,729,733	274,681
4700 RECREATION	$1,706,118	1,636,730	-69,388
4900 OTHER GENERAL	$485,424	423,258	-62,166
	19,366,516	**19,560,654**	**194,138**
OTHER REVENUE OWN SOURCES:			
5120 BUSINESS LICENCES	$163,980	208,592	44,612
5170 CONSTRUCTION PERMITS	$3,418,720	3,650,344	231,624
5200 FINES	$2,257,484	2,229,655	-27,829
5300 RENTS & CONCESSIONS	$3,010,970	3,267,400	256,430
5500 INVESTMENT INTEREST	$20,355	276,519	256,164
5600 INTEREST TAX ARREARS	$1,600,000	1,705,868	105,868
	10,471,509	**11,338,378**	**866,869**
GRANTS OTHER GOVERNMENTS:			
7530 RECOVERY DEBT CHARGES	$20,722,099	20,611,812	-110,287
7550 REAL PROGRAM GRANTS	$225,000	373,236	148,236
7555 NPH SUBSIDITY	$1,009,840	995,855	-13,985
7598 MUNICIPAL OPR. GRANT		0	0
7682 RENTAL HOUSING		0	0
7110 FEDERAL GAS TAX REBATE	$4,182,853	4,182,853	0
7100 OTHER GRANTS	$231,125	390,271	159,146
7107 CMHC MORTGAGE SUBSIDIT	$423,358	418,855	-4,503
	26,794,275	**26,972,882**	**178,607**
OTHER TRANSFERS:			
9201 ASSESSMENTS	600,000	715,495	115,495
7999 TRANSFER TO RESERVES	0	0	0
9300 TRANSFER TO RESERVES	3,594,778	3,594,778	0
	4,194,778	**4,310,273**	**115,495**
TOTAL REVENUE	**$272,286,679**	**$277,049,470**	**$4,762,791**

CITY OF ST. JOHN'S
EXPENDITURE PROJECTION
June 30, 2014

	Approved Budget 2014	Projected To Year End	Favourable (Unfavourable) Variance
GENERAL GOVERNMENT:			
GENERAL ADMINISTRATIVE:			
1111 MAYOR AND COUNCIL	$661,564	665,179	-3,615
1112 MAYOR'S OFFICE	$11,890	15,938	-4,048
1115 CIVIC EVENTS & RECEPTIONS	$183,851	167,696	16,155
2531 EMERGENCY PREPAREDNESS	$117,929	109,356	8,573
1210 BUISNESS PLANNING & OPERATIONAL REVIEW		0	0
1211 ADMINISTRATION - STRATEGY & ENGAGEMEN	$820,456	806,738	13,718
1212 ADMINISTRATION - ADMIN. SERVICES	$469,381	502,289	-32,908
1213 PERSONNEL AND LABOUR RELATIONS	$460,361	381,500	78,861
1214 BENEFITS ADMINISTRATION	$205,727	200,293	5,434
1215 CITY MANAGER'S OFFICE	$372,599	393,012	-20,413
1216 EMPLOYEE WELLNESS	$792,236	768,616	23,620
1217 EMPLOYEE DEVELOPMENT	$526,644	469,270	57,374
1218 EMPLOYEE RELATIONS	$826,439	759,112	67,327
1219 569 HR ADMINISTRATION	$644,598	654,932	-10,334
1220 LEGAL SERVICES	$923,522	911,103	12,419
1221 ADMINISTRATION - FINANCE	$600,931	603,647	-2,716
1222 FINANCIAL SERVICES	$1,343,932	1,328,223	15,709
1223 BUDGETARY SERVICES	$334,458	329,820	4,638
1224 ASSET REPORTING	$94,171	93,464	707
1231 ASSESSMENT	$1,432,379	1,410,980	21,399
1241 REVENUE ACCOUNTING	$1,195,872	1,167,713	28,159
1250 PROPERTY MANAGEMENT	$468,678	451,589	17,089
1251 OFFICE SERVICES	$933,383	1,017,521	-84,138
1252 MAINTENANCE OF CITY HALL	$735,497	692,274	43,223
1253 ELECTRICAL MAINTENANCE	$684,679	658,570	26,109
1254 MAINTENANCE CITY HALL ANNEX	$214,933	190,145	24,788
1255 BUILDING & FACILITY MAINTENANCE	$405,357	317,266	88,091
1256 MAINTENANCE FIRE DEPARTMENT	$346,870	292,794	54,076
1257 MAINTENANCE RAILWAY COASTAL MUSEUM	$203,703	192,401	11,302
1258 MTCE CIVIC # 245 FRESHWATER RD	$215,002	237,051	-22,049
1259 MAINTENANCE PROPERTY ASSESSMENT BUIL	$58,007	49,817	8,190
1261 PURCHASING	$646,003	642,982	3,021
1262 STORES-INVENTORY	$808,976	895,102	-86,126
1268 ADMIN. CORPORATE SERVICES	$290,628	260,801	29,827
1269 INTERNAL AUDIT	$254,642	244,758	9,884
1270 CORPORATE COMMUNICATIONS	$478,075	471,491	6,584
1272 INFORMATION SERVICES	$4,018,360	4,005,561	12,799
1274 SERVICE CENTRE	$1,715,356	1,671,888	43,468
	24,497,089	**24,030,892**	**466,197**
PENSIONS & BENEFITS:			
1290 PENSIONS	$1,301,260	1,275,078	26,182
1297 LUMPSUM SICK LEAVE	$1,520,000	1,666,502	-146,502
	2,821,260	**2,941,580**	**-120,320**
ENGINEERING:			
1311 ADMIN. - ENG. & PLANNING	$334,829	393,249	-58,420
1313 DEVELOPMENT CONTROL	$1,392,339	1,357,307	35,032
1314 SURVEYING	$530,206	518,704	11,502
1315 TRAFFIC & TRANSPORTATION	$1,613,432	654,886	958,546
1316 STENOGRAPHIC - CLERICAL SUPPORT	$339,305	129,263	210,042
1317 ENVIRONMENTAL INITIATIVES	$0	901	-901
1318 LAND INFORMATION SYSTEMS	$1,229,682	1,175,699	53,983

CITY OF ST. JOHN'S
EXPENDITURE PROJECTION
June 30, 2014

	Approved Budget 2014	Projected To Year End	Favourable (Unfavourable) Variance
1319 CONSTRUCTION	$1,356,441	1,319,636	36,805
	6,796,234	**5,549,645**	**1,246,589**
OTHER GENERAL GOVERNMENT:			
1931 LIABILITY INSURANCE	$765,158	798,320	-33,162
1995 MUNICIPAL GENERAL ELECTIONS		0	0
	765,158	**798,320**	**-33,162**
TOTAL GENERAL GOV'T	**34,879,741**	**33,320,438**	**1,559,304**
PROTECTIVE SERVICES:			
FIRE & TRAFFIC:			
2141 TRAFFIC ENFORCEMENT	$2,761,166	2,666,944	94,222
2142 CROSSING GUARD PROGRAM	$108,820	84,180	24,640
2491 FIRE PROTECTION	$21,076,021	21,132,979	-56,958
2498 MAINTENANCE PROPERTY MANAGEMENT MAI	$70,851	77,131	-6,280
	24,016,858	**23,961,234**	**55,624**
PROTECTIVE INSPECTIONS:			
2921 ADMINISTRATIVE - BUILDING DEPT.	$390,091	260,454	129,637
2922 PLANS & TECHNICAL REVIEW	$579,691	-86,830	666,521
2923 ELECTRICAL INSPECTION	$726,658	702,560	24,098
2924 PLUMBING INSPECTION	$318,231	310,997	7,234
2925 STENOGRAPHIC-CLERICAL	$378,019	572,152	-194,133
2926 PLUMBING MAINTENANCE	$89,737	95,166	-5,429
2927 BUILDING INSPECTIONS & MIMIUMN STANDAR	$1,463,293	2,038,305	-575,012
2929 TAXI & BY-LAW INSPECTIONS	$200,660	192,381	8,279
	4,146,380	**4,085,185**	**61,195**
OTHER PROTECTIVE SERVICES:			
2931 ANIMAL & PEST CONTROL	$1,141,528	1,116,018	25,510
2932 ANIMAL CONTROL SHELTER MTCE.	$99,034	91,885	7,149
	1,240,562	**1,207,903**	**32,659**
TOTAL PROTECTIVE SERVICES	**29,403,800**	**29,254,322**	**149,478**
TRANSPORTATION SERVICES:			
STREETS DEPARTMENT:			
3011 ADMINISTRATION PUBLIC WORKS	$904,450	734,566	169,884
3211 ADMIN. - STREETS & PARKS	$2,441,135	2,719,402	-278,267
3221 MAINTENANCE OF ROADS & SIDEWALKS	$7,636,249	7,869,001	-232,752
3231 SNOW CLEARING	$16,027,130	16,626,262	-599,132
3241 WORKS DEPOT MAINTENANCE	$1,440,567	1,583,804	-143,237
3242 MTCE OF ASPHALT RECYCLING FACILITY	$15,660	15,455	205
3252 MAINTENANCE OF TRAFFIC SIGNS & LIGHTS	$600,516	831,043	-230,527
3253 STREET MARKINGS	$1,509,393	1,912,984	-403,591
3262 STREET CLEANING BY HAND	$244,516	165,033	79,483
	30,819,616	**32,457,550**	**-1,637,934**
OTHER TRANSPORTATION SERVICES:			
3521 PARKING METERS	$1,076,237	1,039,489	36,748
3561 STREET LIGHTING	$4,425,000	4,579,370	-154,370
3591 SUBSIDY TO METROBUS	$14,122,906	14,103,415	19,491
3592 PARA-TRANSIT SYSTEM	$2,183,272	2,213,746	-30,474
	21,807,415	**21,936,020**	**-128,605**
TOTAL TRANS. SERVICES	**52,627,031**	**54,393,570**	**-1,766,539**

CITY OF ST. JOHN'S
EXPENDITURE PROJECTION
June 30, 2014

	Approved Budget 2014	Projected To Year End	Favourable (Unfavourable) Variance
ENVIRONMENTAL HEALTH:			
WATER DEPARTMENT:			
4111 ADMIN. - ENVIRONMENTAL SERVICES	$2,279,659	2,226,790	52,869
4121 PHLP WATER TREATMENT PLANT	$1,775,875	96,738	1,679,137
4122 WINSOR LAKE TREATMENT PLANT	$7,378,804	7,020,885	357,919
4123 REGIONAL WATER SYSTEM	$17,864,933	17,514,969	349,964
4124 MTCE. PVR/BOOSTER STATIONS	$481,152	416,844	64,308
4131 MTCE. OF WATER & SEWER SERVICES	$8,925,781	9,135,029	-209,248
4132 WATER METERING	$384,352	347,681	36,671
	39,090,556	**36,758,936**	**2,331,620**
SEWER DEPARTMENT:			
4225 WASTE WATER TREATMENT PLANT	$10,680,072	10,144,538	535,534
4226 SEWER PUMP STATIONS	$678,303	704,413	-26,110
	11,358,375	**10,848,951**	**509,424**
SANITARY DEPARTMENT:			
4321 GARBAGE COLLECTION	$6,521,383	6,693,852	-172,469
4322 WASTE DIVERSION PUBLIC AWARENESS	$168,931	175,890	-6,959
4323 CURB SIDE RECYCLING PROGRAM	$0	1,334	-1,334
4331 GARBAGE & LITTER DISPOSAL	$7,730,151	7,809,590	-79,439
4332 BLDG. MTCE. ROBIN HOOD BAY	$626,150	599,907	26,243
4333 MATERIALS RECOVERY FACILITY	$1,805,167	1,736,549	68,618
4334 RESIDENTAL DROP OFF FACILITY	$830,069	664,479	165,590
4335 EASTERN WASTE MGNT. REGIONAL SERVICE	$2,963,571	2,964,799	-1,228
	20,645,422	**20,646,400**	**-978**
TOTAL ENVIRON. HEALTH	**71,094,353**	**68,254,287**	**2,840,066**
ENVIRONMENTAL DEVELOPMENT:			
PLANNING :			
6113 PLANNING & DEVELOPMENT	$899,539	972,782	-73,243
6118 DOWNTOWN REVITALIZATION	$250,000	249,923	77
6211 ADMINISTRATION - COMMUNITY SERVICES	$717,713	663,772	53,941
	1,867,252	**1,886,477**	**-19,225**
HOUSING AND REAL ESTATE:			
6330 REAL ESTATE - LEGAL	$245,820	237,566	8,254
6341 REAL ESTATE	$16,700	1,385	15,315
6342 RENTAL HOUSING PROJECTS	$493,544	503,079	-9,535
6343 TRANSFERS ACCOMMODATION TAX	$1,250,000	1,250,004	-4
6360 NON-PROFIT HOUSING	$4,516,723	4,292,134	224,589
6391 NON-PROFIT HOUSING ADMINISTRATION	$275,873	267,896	7,977
6392 NON-PROFIT HOUSING MAINTENANCE	$674,319	642,429	31,890
	7,472,979	**7,194,493**	**278,486**
TOURISM & ECONOMIC DEVELOPMENT:			
6611 ADMINISTRATION ECONOMIC DEVELOPMENT	$632,098	589,034	43,064
6612 TOURISM DEVELOPMENT	$875,967	855,003	20,964
6613 VISITOR'S SERVICES	$156,131	134,770	21,361
6614 MEETINGS & CONVENTIONS		19,025	-19,025

CITY OF ST. JOHN'S
EXPENDITURE PROJECTION
June 30, 2014

	Approved Budget 2014	Projected To Year End	Favourable (Unfavourable) Variance
6616 ECONOMIC DEVELOPMENT	$0	14,699	-14,699
6617 TOURISM RESEARCH		-15,758	15,758
6618 PROJECT & EVENT COORDINATION	$0	-11,685	11,685
6619 BUSINESS SERVICES		0	0
6620 MOVED TO 1270		0	0
6624 MTCE. GENTARA BLDG.	$299,202	299,202	0
6625 MAINTENANCE - QUIDI VIDI	$65,770	65,770	0
	2,029,168	**1,950,060**	**79,108**
TOTAL ENVIR DEVELOPMENT	**11,369,399**	**11,031,030**	**338,369**
RECREATION & PARKS:			
PARKS DIVISION:			
7121 MAINTENANCE OF MUNICIPAL PARKS	$1,920,677	2,026,407	-105,730
7122 MTCE. OF PASSIVE OPEN SPACES	$2,401,201	2,314,580	86,621
7123 MAINTENANCE OF SPORTS FACILITIES	$655,827	629,175	26,652
7124 MAINTENANCE OF PLAYGROUNDS	$811,205	850,931	-39,726
7125 MTCE. OF BUCKMASTERS REC. CENTRE	$97,118	91,537	5,581
7126 HORTICULTURAL MAINTENANCE	$1,101,375	966,110	135,265
7127 MAINTENANCE OF ROTARY PARK	$89,824	78,968	10,856
7130 MAINTENANCE OF H.G.R. MEWS CENTRE	$215,710	234,506	-18,796
7131 AQUATIC MAINTENANCE - PARKS	$224,318	207,424	16,894
7133 MTCE. ROTAY PARK CHALET	$42,999	37,677	5,322
7134 MTCE. SPORTS BUILDINGS	$233,793	214,725	19,068
7135 SNOW CLEARING STEPS AND R.O.W.	$593,921	616,171	-22,250
7136 MTCE. SHEA HEIGHTS COMMUNITY CENTER	$69,824	54,606	15,218
7137 WEDGEWOOD PARK FAC. MTCE.	$117,953	111,615	6,338
7138 MTCE. KILBRIDE COMMUNITY CENTER	$70,914	66,135	4,779
7139 MTCE SOUTHLANDS COMMUNITY CENTER	$67,860	45,695	22,165
7141 ANNA TEMPLETON CENTER - MTCE.	$19,000	14,729	4,271
7225 BOWRING BARK BLDG. MAINTENANCE	$134,041	115,001	19,040
	8,867,560	**8,675,992**	**191,568**
RECREATION:			
7301 RECREATION ADMINISTRATION	$781,944	875,536	-93,592
7305 FAMILY & LEISURE SERVICES	$1,361,673	1,343,188	18,485
7311 COMMUNITY DEVELOPMENT ADMINISTRATION	$983,052	908,319	74,733
7315 RECREATION INFORMATION SERVICES	$118,370	68,692	49,678
7321 OPERATIONS SUMMER REC. PROGRAM	$309,404	253,149	56,255
7322 OPERATION OF BOWRING PARK POOL	$103,242	91,966	11,276
7324 FACILITIES DIVISION ADMINISTRATION	$473,852	474,013	-161
7325 OPERATION OF H.G.R. MEWS CENTRE	$588,929	623,051	-34,122
7329 H.G.R. MEWS CENTRE - AQUATICS & FITNESS	$537,616	537,882	-266
7330 GOULDS RECREATION ASSOCIATION	$160,860	120,510	40,350
7331 WEDGEWOOD PARK FACILITY OPERATIONS	$351,417	367,029	-15,612
7332 WEDGEWOOD PARK - AQUATICS & FITNESS P	$412,310	409,994	2,316
7333 SENIORS PROGAMS & SERVICES	$126,295	112,149	14,146
7334 OPERATION OF BANNERMAN PARK POOL	$70,002	59,884	10,118
7335 OTHER FACILITY OPERATIONS	$153,414	142,456	10,958
7336 SHEA HEIGHTS COMMUNITY CENTRE	$184,928	185,722	-794
7337 SOUTHLANDS COMMUNITY CENTER	$153,364	99,632	53,732
7338 KILBRIDE COMMUNITY CENTRE	$193,669	190,416	3,253
7341 SPORT AND COMMUNICATION	$671,680	583,832	87,848
	7,736,021	**7,447,420**	**288,601**

CITY OF ST. JOHN'S
EXPENDITURE PROJECTION
June 30, 2014

	Approved Budget 2014	Projected To Year End	Favourable (Unfavourable) Variance
OTHER RECREATIONAL & CULTURAL SERVICES:			
7445 CIVIC CENTRE CORPORATION	$1,000,000	1,000,000	0
7551 GRANTS AND SUBSIDIES TO ORGANIZATIONS	$1,180,000	1,279,677	-99,677
7911 MUNICIPAL ARCHIVES	$255,229	240,854	14,375
7910 CULTURAL DEVELOPMENT	$385,298	335,932	49,366
7912 RAILWAY COASTAL MUSEUM	$462,098	427,363	34,735
	3,282,625	**3,283,826**	**-1,201**
TOTAL RECREATION & CULTURAL	**19,886,206**	**19,407,238**	**478,968**
FISCAL & TRANSFERS:			
DEBT CHARGES:			
8111 SHORT TERM BORROWINGS	$180,000	114,503	65,497
8121 LONG TERM DEBT CHARGES	$193,560	193,560	0
8131 DEBENTURE DEBT CHARGES	$30,673,722	30,729,262	-55,540
8191 OTHER DEBT CHARGES	$80,000	75,075	4,925
TOTAL FISCAL SERVICES	**31,127,282**	**31,112,400**	**14,882**
OTHER TRANSFERS:			
8211 ALLOWANCE FOR DOUBTFUL ACCOUNTS	$1,550,000	1,568,645	-18,645
8213 SNOW AND ICE RESERVE		0	0
8990 CONTRIBUTIONS TO CAPITAL FUND	$15,414,952	15,075,936	339,016
9002 DEFICIT FUNDING		0	0
9300 HARBOUR CLEAN-UP RESERVE		0	0
0000 WATER TREATMENT RESERVE		0	0
TOTAL OTHER TRANSFERS	**16,964,952**	**16,644,581**	**320,371**
TOTAL EXPENDITURE:	**267,352,764**	**263,417,867**	**3,934,897**
TRANSFERS TO OTHER DEPARTMENTS:			
PAYROLL COSTS:			
1295 EMPLOYEE FRINGE BENEFITS	$6,073,675	6,886,996	-813,321
MECHANICAL:			
3111 ADMINISTRATION - MECHANICAL DEPT.	$1,355,115	1,398,207	-43,092
3121 VEHICLE & EQUIPMENT MAINTENANCE	$7,616,663	7,830,097	-213,434
3123 ROBIN HOOD BAY HEAVY EQUIPMENT	$628,928	633,596	-4,668
3129 VEHICLE FLEET RENTAL	-$10,740,465	-6,867,032	-3,873,433
TOTAL MECHANICAL	**-1,139,759**	**2,994,868**	**-4,134,627**
TOTAL EXPENDITURE:	**$272,286,680**	**$273,299,731**	**-$1,013,051**

Report/Recommendations
Public Works Standing Committee
August 21, 2014

In Attendance: Councillor Jonathan Galgay, Chairperson
Councillor Sandy Hickman
Councillor Bruce Tilley
Councillor Bernard Davis
Paul Mackey, Deputy City Manager of Public Works
Brendan O'Connell, Director of Engineering
Don Brennan, Director of Roads & Traffic
Phil Hiscock, Manager of Roads
David Crowe, Operations Supervisor
Jonathan Murphy, Waste Management Engineer
Maureen Harvey, Senior Legislative Assistant

1. **Memorandum dated August 7, 2014 from Deputy City Manager – Public Works re: re: Robin Hood Bay Waste Management – Residential Drop-off Rules**

The Committee considered the above-noted memorandum and agreed as follows.

Recommendation:
Moved by Councillor Hickman; seconded by Councillor Davis: That approval be given to the following restriction at the Residential Drop Off site at Robin Hood Bay:

Waste loads must be completely covered and secure to prevent any contents from escaping while the load is being transported.

It was further agreed that the matter of ticketing people for uncovered loads be brought forward to Council once the ongoing review by the Legal Department is completed. This information will be communicated to the general public and signage will be posted at the facility.

2. **Petition for Playground - Wigmore Court, Austin St, Thorburn Road and Cumberland Crescent - referred from Council on June 2, 2014**

The Committee considered the above-noted petition and reviewed a memorandum dated August 19, 2014 from the Acting Manager of Parks & Open Spaces.

Recommendation
The Committee recommends the petition be copied to NLHC with a letter of request for a meeting to discuss the possibility of having a playground reinstated on the property by NLHC.

3. Request for restricted Access to Virginia Park Playground and Ballfield - referred from Police & Traffic on July 16th)

The Operations Supervisor informed the Committee that the work being carried out to restrict access to Virginia Park Playground and Ballfield is nearing completion.

4. Memorandum dated June 27, 2014 from the Director of Roads and Traffic re: Street Excavation Permits and Fees.

The Committee reviewed the above-noted memorandum which was written in response to inquiries regarding the cost of street excavation permits.

Recommendation:
Moved by Councillor Hickman: That the current fee schedule for street excavation, which is in line with those charged by adjacent municipalities, be maintained.

5. Process for notification of residents for street cleaning. (see email from Councillor Galgay)

Chairperson Galgay reported a number of calls from constituents who have been ticketed, allegedly because they weren't aware of the street cleaning schedule in their area. It was noted that the practice of issuing "hard copy" notifications had ceased last year on the recommendation of the Division of Strategy and Engagement. It was noted that Roads and Traffic Division is undertaking a full review of the street cleaning program which will be presented to the Committee at a later date. It was also suggested that staff consult with Parking Enforcement about alleged inappropriate ticketing.

Recommendation
Moved by Councillor Hickman: That the practice of paper notification to residents whose streets are to be cleaned be reinstated.

6. Proposed New Equipment for Asphalt Repair Program

The Committee considered a memorandum dated August 22, 2014 from the Manager of Roads which identified the need for an additional front end loader for the asphalt repair program.

It was noted that many years ago the City instituted a cost recovery program that allowed for the collection of $200.00 per Street Excavation permit to help offset the costs associated with asphalt repairs to mostly lateral street excavations. This fund was intended to cover the cost of repairing asphalt settlement after the expiration of the warranty period. At the end of 2013 there weren't sufficient funds to really be effective or make significant difference to any potential operations. However, the fund now amounts to $271,386.72 and will facilitate the purchase of equipment.

Recommendation:

Moved by Councillor Hickman; That using funds from the City's asphalt reinstatement fund, a tender be called for the purchase of an additional front end loader (estimated cost $250,000) that will be used to augment the City's fleet for street resurfacing and snowclearing programs.

Councillor Jonathan Galgay
Chairperson

MEMORANDUM

Date: 2014-08-25

To: His Worship the Mayor and Members of Council

From: Tanya Haywood, Director, Recreation Division
Department of Community Services

Re: Special Events Advisory Committee Recommendation

The following recommendation of the Committee is forwarded to Council for approval in principle subject to any conditions that may be required by the Special Events Advisory Committee:

1) **Event:** Take Back the Night March
Location: Bannerman Park to City Hall
Date: September 19, 2014
Time: 7:00 p.m. to 8:30 p.m.

Special Events Advisory Committee Recommendation:

It is the recommendation of the Committee that Council approve the above noted event, subject to the conditions set out by the Special Events Advisory Committee.

Tanya Haywood
Director, Recreation Division
Department of Community Services

DEVELOPMENT PERMITS LIST
DEPARTMENT OF PLANNING, DEVELOPMENT AND ENGINEERING
FOR THE PERIOD OF August 21, 2014 TO August 27, 2014

Code	Applicant	Application	Location	Ward	Development Officer's Decision	Date
COM	Local 855 (Teamsters Union)	Office Building	70 Mews Place	4	**Approved**	14-08-21
RES	Your Computer Connection Inc.	Home Office	6 Moss Heather Drive	4	**Approved**	14-08-25
RES		Home Office for Electrical Contractor	100 Carter's Hill	2	**Approved**	14-08-25
OT	City Sand & Gravel	Quarry Permit	Paradise		**Approved**	14-08-26
RES	Sheppard Case Architect	25 unit Seniors Apartment	24 Road de Luxe	3	**Approved**	14-08-26

* **Code Classification:**
RES - Residential
COM - Commercial
AG - Agriculture
OT - Other
INST - Institutional
IND - Industrial

** **This list is issued for information purposes only. Applicants have been advised in writing of the Development Officer's decision and of their right to appeal any decision to the St. John's Local Board of Appeal.**

Gerard Doran
Development Officer
Department of Planning

Building Permits List
Council's September 02, 2014 Regular Meeting

Permits Issued: 2014/08/21 To 2014/08/27

Class: Commercial

5 Springdale St	Sn	Office
385 Empire Ave	Ms	Office
193 Kenmount Rd	Ms	Retail Store
595 Kenmount Rd	Sn	Commercial Garage
431-435 Main Rd	Ms	Take-Out Food Service
57 Old Pennywell Rd	Ms	Retail Store
22 O'leary Ave	Ms	Restaurant
502 Topsail Rd	Ms	Service Shop
660 Torbay Rd	Ms	Retail Store
141 Torbay Rd	Ms	Restaurant
141 Torbay Rd	Ms	Office
Torbay Road-Torbay Rd Mall	Ms	Restaurant
351 Water St, Flight Centre	Sn	Office
16 Queen St	Rn	Tavern
428 Empire Ave	Rn	Retail Store
10 Factory Lane	Rn	Office
48 Allandale Rd	Rn	Office
69 Mews Pl	Cr	Office
48 Kenmount Rd/Nl Chocolate Co	Cr	Retail Store
343 Water St	Rn	Retail Store
365-367 Water St	Rn	Mixed Use
100 Military Rd	Sw	Recreational Use
70 Mews Pl	Nc	Office

This Week $ 4,160,850.00

Class: Industrial

This Week $ .00

Class: Government/Institutional

This Week $ .00

Class: Residential

50 Beaver Brook Dr	Nc	Swimming Pool
20 Blackwood Pl	Nc	Patio Deck
108 Bonaventure Ave	Nc	Fence
16 Burdell Pl	Nc	Patio Deck
16 Burdell Pl	Nc	Accessory Building
134 Cheeseman Dr	Nc	Swimming Pool
41 Cherrington St	Nc	Accessory Building
10 Cherrybark Cres	Nc	Swimming Pool
16 Cherrybark Cres , Lot 215	Nc	Single Detached Dwelling
5 Devine Pl	Nc	Patio Deck
35 Devine Pl	Nc	Fence
28-30 Donovan's Rd	Nc	Accessory Building
28-30 Donovan's Rd	Nc	Swimming Pool
101 Doyle's Rd	Nc	Single Detached Dwelling
9 Dundas St	Nc	Fence

56 Dunkerry Cres	Nc	Fence
150 Freshwater Rd	Nc	Accessory Building
345 Groves Rd, Lot 5	Nc	Single Detached Dwelling
11 Guernsey Pl, Lot 28 Unit 1	Nc	Condominium
11 Guernsey Pl, Lot 28 Unit 2	Nc	Condominium
11 Guernsey Pl, Lot 28 Unit 3	Nc	Condominium
11 Guernsey Pl, Lot 28 Unit 4	Nc	Condominium
13 Guernsey Pl, Lot 27, Unit 1	Nc	Condominium
13 Guernsey Pl, Lot 27, Unit 2	Nc	Condominium
13 Guernsey Pl, Lot 27 Unit 3	Nc	Condominium
13 Guernsey Pl, Lot 27 Unit 4	Nc	Condominium
15 Guernsey Pl, Lot 26 Unit 1	Nc	Condominium
15 Guernsey Pl, Lot 26 Unit 2	Nc	Condominium
15 Guernsey Pl, Lot 26 Unit 3	Nc	Condominium
15 Guernsey Pl, Lot 26 Unit 4	Nc	Condominium
17 Guernsey Pl, Unit 1	Nc	Condominium
17 Guernsey Pl Unit 2	Nc	Condominium
17 Guernsey Pl Unit 3	Nc	Condominium
17 Guernsey Pl Unit 4	Nc	Condominium
12 Jamie Korab St	Nc	Accessory Building
87 Ladysmith Drive	Nc	Accessory Building
9 Larner St	Nc	Patio Deck
24 Macbeth Dr	Nc	Fence
876 Main Rd	Nc	Accessory Building
21 Orlando Pl, Lot 271	Nc	Single Detached & Sub.Apt
11 Outerbridge St	Nc	Accessory Building
54 Parsonage Dr., Lot 2.12	Nc	Single Detached Dwelling
234 Airport Heights Dr	Nc	Patio Deck
5 Solway Cres, Lot 323	Nc	Single Detached Dwelling
9 Stephano St	Nc	Fence
7 Tansley St, Lot 54	Nc	Single Detached Dwelling
484 Thorburn Rd	Nc	Accessory Building
511 Thorburn Rd	Nc	Single Detached Dwelling
28 Viscount St	Nc	Accessory Building
6 Waterford Hts S	Nc	Accessory Building
9 Waterview Pl	Nc	Single Detached Dwelling
7 Aldergrove Pl	Co	Office
23 Almond Cres	Ex	Single Detached Dwelling
15 Bideford Pl	Ex	Single Detached Dwelling
16 Burdell Pl	Ex	Single Detached Dwelling
12 Mahogany Pl	Ex	Single Detached Dwelling
9 Midstream Pl	Ex	Single Detached Dwelling
65 Battery Rd	Rn	Semi-Detached Dwelling
7 Bradbury Pl	Rn	Semi-Detached Dwelling
142 Castle Bridge Dr	Rn	Single Detached Dwelling
19 Galashiels Pl - Lot 128	Rn	Single Detached Dwelling
32 Gower St	Rn	Townhousing
28 Kenai Cres	Rn	Single Detached Dwelling
64 Lime St	Rn	Townhousing
68 Lime St	Rn	Townhousing
23 Monkstown Rd	Rn	Single Detached Dwelling
169-171 New Pennywell Rd	Rn	Semi-Detached Dwelling
173-175 New Pennywell Rd	Rn	Semi-Detached Dwelling
35 Oberon St	Rn	Single Detached Dwelling
6 O'reilly St	Rn	Single Detached Dwelling
58 Penetanguishene Rd	Rn	Single Detached Dwelling
27 Prospect St	Rn	Subsidiary Apartment
34 Rutledge Cres	Rn	Single Detached Dwelling
16 Warford Rd	Rn	Single Detached Dwelling
26 Fourth Pond Rd	Sw	Single Detached Dwelling
5 Musgrave St	Sw	Single Detached & Sub.Apt
48 Quebec St	Sw	Single Detached Dwelling
65 Stavanger Dr - Cibc	Ms	Bank

This Week $ 6,143,847.00

Class: Demolition

62 Cuckhold's Cove Rd	Dm	Single Detached Dwelling
625 Southside Rd	Dm	Single Detached Dwelling
1 Tessier's Lane	Dm	Single Detached & Sub.Apt

This Week $ 29,000.00

This Week's Total: $ 10,333,697.00

Repair Permits Issued: 2014/08/21 To 2014/08/27 $ 171,500.00

Legend

Co	Change Of Occupancy	Sn	Sign
Cr	Chng Of Occ/Renovtns	Sw	Site Work
Nc	New Construction	Ex	Extension
Rn	Renovations	Dm	Demolition
Ms	Mobile Sign		

YEAR TO DATE COMPARISONS

September 2, 2014

TYPE	**2013**	**2014**	**% VARIANCE (+/-)**
Commercial	$68,471,000.00	$101,104,000.00	48
Industrial	$131,000.00	$125,300.00	-4
Government/Institutional	$71,281,000.00	$77,742,000.00	9
Residential	$112,219,000.00	$106,778,000.00	-5
Repairs	$3,485,000.00	$3,504,000.00	1
Housing Units (1 & 2 Family Dwellings)	313	228	
TOTAL	**$255,587,000.00**	**$289,253,300.00**	13

Respectfully Submitted,

Jason Sinyard, P. Eng., MBA
Director of Planning & Development

MEMORANDUM

Weekly Payment Vouchers
For The
Week Ending August 27, 2014

Payroll

Public Works	**$ 417,258.80**
Bi-Weekly Administration	**$ 816,515.19**
Bi-Weekly Management	**$ 727,979.22**
Bi-Weekly Fire Department	**$ 702,460.33**
Accounts Payable	**$4,218,880.77**
Total:	**$ 6,883,094.31**

ST. JOHN'S
DEPARTMENT OF FINANCE
CITY OF ST. JOHN'S PO BOX 908 ST. JOHN'S NL CANADA A1C 5M2 WWW.STJOHNS.CA

NAME	CHEQUE #	DESCRIPTION	AMOUNT
ROGERS BUSINESS SOLUTIONS	71923	DATA & USAGE CHARGES	$10,002.32
ENTERPRISE RENT-A-CAR	71924	VEHICLE RENTAL	$1,553.15
NEWFOUNDLAND POWER	71925	ELECTRICAL SERVICES	$1,699.96
NADINE MARTIN	71926	SUPPLIES FOR ACTIVE CAMPS	$116.83
INFINITY CONSTRUCTION	71927	PROGRESS PAYMENT	$22,275.93
KRYSTAL KELSEY	71928	REIMBURSEMENT TUITION	$821.80
ROYAL BANK VISA	71929	VISA PAYMENT	$2,214.67
HURLEY, ANNETTE	71930	TRAVEL ADVANCE	$394.38
POWER, BRENDA	71931	REIMBURSEMENT SUPPLIES	$377.75
CRAIG MARSHALL	71932	CLOTHING ALLOWANCE	$33.89
ECONOLITE CANADA INC.,	71933	PROFESSIONAL SERVICES	$1,356.00
NEWFOUNDLAND POWER	71934	ELECTRICAL SERVICES	$17,857.96
RECEIVER GENERAL FOR CANADA	71935	PAYROLL DEDUCTIONS	$130,471.88
RECEIVER GENERAL FOR CANADA	71936	PAYROLL DEDUCTIONS	$34,661.62
FRANK & G. DELACEY	71937	REFUND OVERPAYMENT OF TAXES	$1,252.39
PIK-FAST EXPRESS INC.	71938	BOTTLED WATER	$43.50
SIMPLEX GRINNELL	71939	PROFESSIONAL SERVICES	$290.41
DICKS & COMPANY LIMITED	71940	OFFICE SUPPLIES	$105.46
THYSSENKRUPP ELEVATOR	71941	ELEVATOR MAINTENANCE	$282.50
THE TELEGRAM	71942	ADVERTISING	$125.43
JOHNSON INVESTMENTS INC.	71943	PROFESSIONAL SERVICES	$1,125.00
RCAP	71944	LEASE OF OFFICE SPACE	$192.71
GENTARA REAL ESTATE LP	71945	LEASE OF OFFICE SPACE	$27,129.44
IPS INFORMATION PROTECTION SERVICES LTD.	71946	PAPER SHREDDED ON SITE	$402.73
MICROSOFT CANADA	71947	SOFTWARE RENEWAL	$5,592.69
NEWFOUND DISPOSAL SYSTEMS LTD.	71948	DISPOSAL SERVICES	$1,268.21
PUBLIC SERVICE CREDIT UNION	71949	PAYROLL DEDUCTIONS	$5,648.86
COOK, CAROLYN	71950	REIMBURSEMENT WRITERS SUPPER & PARKI	$186.28
POWER, BRENDA	71951	REIMBURSEMENT FOR SUPPLIES	$377.75
CANCELLED	71952	PRINTER PROBLEM	$0.00
CANCELLED	71953	PRINTER PROBLEM	$0.00
CANCELLED	71954	PRINTER PROBLEM	$0.00

ROBERT BAIRD EQUIPMENT LTD.	71955	RENTAL OF EQUIPMENT	$1,410.12
NEWFOUNDLAND POWER	71956	ELECTRICAL SERVICES	$71,316.20
ROBERT BAIRD EQUIPMENT LTD.	71957	RENTAL OF EQUIPMENT	$10,323.54
CLARKE'S TRUCKING & EXCAVATING	71958	PROGRESS PAYMENT	$196,887.67
WAL-MART 3093-MERCHANT DRIVE	71959	MISCELLANEOUS SUPPLIES	$292.12
GORDON BARNES	71960	PROFESSIONAL SERVICES	$2,400.00
CRAWFORD & COMPANY CANADA INC	71961	ADJUSTING FEES	$518.00
PYRAMID CONSTRUCTION LIMITED	71962	PROGRESS PAYMENTS	$2,078,642.11
THOMAS, MIREILLE	71963	TRANSLATION FEE	$239.00
KRYSTAL WELLS	71964	RECREATION PROGRAM REFUND	$135.00
WINDSOR, JOSEPH	71965	VEHICLE BUSINESS INSURANCE	$109.25
ACKLANDS-GRAINGER	71966	INDUSTRIAL SUPPLIES	$761.39
AFONSO GROUP LIMITED	71967	SEWER INSPECTIONS	$2,373.00
ASHFORD SALES LTD.	71968	REPAIR PARTS	$126.45
ATLANTIC PURIFICATION SYSTEM LTD	71969	WATER PURIFICATION SUPPLIES	$333.52
AUTOMOTIVE SUPPLIES 1985 LTD.	71970	AUTO SUPPLIES	$110.69
AVALON ANIMAL HOSPITAL LTD.	71971	PROFESSIONAL SERVICES	$26.71
B & B SALES LTD.	71972	SANITARY SUPPLIES	$267.33
COSTCO WHOLESALE	71973	MISCELLANEOUS SUPPLIES	$172.94
KELLOWAY CONSTRUCTION LIMITED	71974	CLEANING SERVICES	$49,264.84
RDM INDUSTRIAL LTD.	71975	INDUSTRIAL SUPPLIES	$441.78
ROBERT BAIRD EQUIPMENT LTD.	71976	RENTAL OF EQUIPMENT	$4,061.65
DISCOUNT CAR & TRUCK RENTALS	71977	VEHICLE RENTAL	$4,896.29
QUEEN'S PRINTER	71978	ADVERTISING	$206.79
NEWFOUNDLAND EXCHEQUER ACCOUNT	71979	REGISTRATION OF EASEMENT	$200.00
BATTLEFIELD EQUIP. RENTAL CORP	71980	REPAIR PARTS	$3,308.64
GRAND CONCOURSE AUTHORITY	71981	MAINTENANCE CONTRACTS	$224,307.32
SMS EQUIPMENT	71982	REPAIR PARTS	$264.73
CABOT PEST CONTROL	71983	PEST CONTROL	$1,482.00
CUSTOM SYSTEMS ELECTRONICS LTD	71984	PROFESSIONAL SERVICES	$541.11
PLAZA BOWL LIMITED	71985	YOUTH EXPEDITIONS GAMES WEEK	$48.00
ROCKWATER PROFESSIONAL PRODUCT	71986	CHEMICALS	$5,745.82
BLACK & MCDONALD LIMITED	71987	PROFESSIONAL SERVICES	$3,952.75
BLAZER CONCRETE SAWING & DRILL	71988	PROFESSIONAL SERVICES	$6,780.00

EC BOONE LTD.	71989	PROTECTIVE CLOTHING	$1,973.05
MARITIME GREEN PRODUCTS	71990	REPAIR PARTS	$669.05
CLASS C SOLUTIONS GROUP	71991	REPAIR PARTS	$4,048.15
BRENKIR INDUSTRIAL SUPPLIES	71992	PROTECTIVE CLOTHING	$1,310.52
BROWNE'S AUTO SUPPLIES LTD.	71993	AUTOMOTIVE REPAIR PARTS	$689.92
RED OAK CATERING	71994	CATERING SERVICES	$4,630.77
ATLANTIC METAL COATINGS LTD	71995	SANDBLASTING SERVICES	$1,412.50
OFFICEMAX GRAND & TOY	71996	OFFICE SUPPLIES	$18.08
SPECTRUM INVESTIGATION & SECURITY 1998 LTD.	71997	SECURITY SERVICES	$1,892.75
BDI CANADA INC	71998	REPAIR PARTS	$908.52
OUTFITTERS	71999	SUPPLIES RECREATION	$112.94
ATLANTIC TRAILER & EQUIPMENT	72000	REPAIR PARTS	$407.33
SIGNS 1ST	72001	SIGNAGE	$121.00
TRIWARE TECHNOLOGIES INC.	72002	COMPUTER EQUIPMENT	$339.00
NEW WORLD FITNESS	72003	MEMBERSHIP DUES FOR FIREFIGHTERS	$243.94
CHESTER DAWE CANADA - O'LEARY AVE	72004	BUILDING SUPPLIES	$356.00
CAMPBELL RENT ALLS LTD.	72005	HARDWARE SUPPLIES	$822.64
AIR LIQUIDE CANADA INC.	72006	CHEMICALS AND WELDING PRODUCTS	$43,575.15
WAL-MART 3196-ABERDEEN AVE.	72007	MISCELLANEOUS SUPPLIES	$1,243.56
SOBEY'S INC	72008	PET SUPPLIES	$220.01
NORTRAX CANADA INC.,	72009	REPAIR PARTS	$1,380.94
NEWFOUNDLAND GLASS & SERVICE	72010	GLASS INSTALLATION	$3,331.83
ROLEY CONSTRUCTION LTD.	72011	RENTAL OF EQUIPMENT	$406.80
MAC TOOLS	72012	TOOLS	$1,117.46
GENEQ INC.	72013	REPAIR PARTS	$1,614.96
NORTH ATLANTIC SUPPLIES INC.	72014	REPAIR PARTS	$706.25
CLARKE'S TRUCKING & EXCAVATING	72015	GRAVEL	$3,024.00
WAL-MART 3093-MERCHANT DRIVE	72016	MISCELLANEOUS SUPPLIES	$21.33
BRAEMAR PEST CONTROL SERVICES	72017	PEST CONTROL	$221.48
RON FOUGERE ASSOCIATES LTD	72018	ARCHITECTURAL SERVICES	$89,974.05
STEELE COMMUNICATIONS	72019	ADVERTISING	$1,130.23
COLONIAL GARAGE & DIST. LTD.	72020	AUTO PARTS	$15,525.02
SAFWAY SERVICES CANADA INC.	72021	REPAIR PARTS	$500.78
CONSTRUCTION SIGNS LTD.	72022	SIGNAGE	$16,413.86

CONTROLS & EQUIPMENT LTD.	72023	REPAIR PARTS	$117.16
SCOTT WINSOR ENTERPRISES INC.,	72024	REMOVAL OF GARBAGE & DEBRIS	$28,845.46
MAXXAM ANALYTICS INC.,	72025	WATER PURIFICATION SUPPLIES	$4,880.76
JAMES G CRAWFORD LTD.	72026	PLUMBING SUPPLIES	$821.69
CROSBIE INDUSTRIAL SERVICE LTD	72027	PROFESSIONAL SERVICES	$7,499.81
NEWFOUND CABS	72028	TRANSPORTATION SERVICES	$1,939.91
THOMAS ECONOMY GLASS	72029	PROFESSIONAL SERVICES	$45.20
CUMMINS EASTERN CANADA LP	72030	REPAIR PARTS	$41.61
KENDALL ENGINEERING LIMITED	72031	PROFESSIONAL SERVICES	$5,428.74
GJ CAHILL & COMPANY LIMITED	72032	REFUND ELECTRICAL PERMIT	$556.60
DAY TIMERS OF CANADA LTD.	72033	OFFICE SUPPLIES	$56.47
CRAWFORD & COMPANY CANADA INC	72034	ADJUSTING FEES	$1,144.00
DICKS & COMPANY LIMITED	72035	OFFICE SUPPLIES	$4,893.82
WAJAX POWER SYSTEMS	72036	REPAIR PARTS	$60.69
DOMINION STORES #922	72037	MISCELLANEOUS SUPPLIES	$164.79
REEFER REPAIR SERVICES LTD.	72038	REPAIR PARTS	$60.78
DOMINION RECYCLING LTD.	72039	PIPE	$242.95
G & M PROJECT MANAGEMENT	72040	PROFESSIONAL SERVICES	$53,098.70
RUSSEL METALS INC.	72041	METALS	$146.90
CANADIAN TIRE CORP.-ELIZABETH AVE.	72042	MISCELLANEOUS SUPPLIES	$248.18
CANADIAN TIRE CORP.-MERCHANT DR.	72043	MISCELLANEOUS SUPPLIES	$109.56
EASTERN TURF PRODUCTS	72044	REPAIR PARTS	$2,722.40
ENTERPRISE RENT A CAR	72045	RENTAL OF VEHICLES	$4,322.25
EM PLASTIC & ELECTRIC PROD LTD	72046	REPAIR PARTS	$265.55
STOKES INTERNATIONAL	72047	CITATION CORDS	$305.10
HOME DEPOT OF CANADA INC.	72048	BUILDING SUPPLIES	$4,307.59
DOMINION STORE 935	72049	MISCELLANEOUS SUPPLIES	$578.70
BASIL FEARN 93 LTD.	72050	REPAIR PARTS	$812.19
EMERGENCY REPAIR LIMITED	72051	AUTO PARTS AND LABOUR	$33,095.94
FRESHWATER AUTO CENTRE LTD.	72052	AUTO PARTS/MAINTENANCE	$3,953.22
TIM HORTONS STORE - MOUNT PEARL	72053	REFRESHMENTS	$68.98
ABSTRACT & AUXILIARY SERVICES	72054	TITLE SEARCH	$484.00
PRINCESS AUTO	72055	MISCELLANEOUS ITEMS	$1,335.13
MILLENNIUM EXPRESS	72056	COURIER SERVICES	$135.60

DALHOUSIE UNIVERSITY	72057	TUITION FEES	$7,160.00
CITY WIDE TAXI	72058	TRANSPORTATION SERVICES	$26.00
COASTLINE SPECIALTIES	72059	PROFESSIONAL SERVICES	$3,005.80
STELLAR INDUSTRIAL SALES LTD.	72060	INDUSTRIAL SUPPLIES	$1,189.55
ENTERPRISE RENT-A-CAR	72061	RENTAL OF VEHICLES	$4,462.37
NEWALTA CORPORATION	72062	PROFESSIONAL SERVICES	$31,146.02
PILOT COMMUNICATIONS	72063	PROFESSIONAL SERVICES	$1,243.00
PROVINCIAL FENCE PRODUCTS	72064	FENCING MATERIALS	$3,240.84
PENNEY'S HOLDINGS LIMITED	72065	PROFESSIONAL SERVICES	$2,627.25
WOLSELEY CANADA WATERWORKS	72066	REPAIR PARTS	$981.00
TROY FIRE & LIFE SAFETY LTD.	72067	PROFESSIONAL SERVICES	$714.16
THE WORKS	72068	MEMBERSHIP FEES	$166.65
EASTERN PROPANE	72069	PROPANE	$95.98
HARVEY'S OIL LTD.	72070	PETROLEUM PRODUCTS	$35,321.73
GUILLEVIN INTERNATIONAL CO.	72071	ELECTRICAL SUPPLIES	$301.17
BRENNTAG CANADA INC	72072	CHLORINE	$32,145.48
GRAYMONT (NB) INC.,	72073	HYDRATED LIME	$20,725.47
BELL DISTRIBUTION INC.,	72074	CELL PHONES & ACCESSORIES	$259.60
HISCOCK RENTALS & SALES INC.	72075	HARDWARE SUPPLIES	$219.10
TOTAL LUBRICANTS CANADA INC.,	72076	LUBRICANTS	$425.25
NL NEWS NOW INC.	72077	ADVERTISING	$259.12
PENNECON ENERGY TECHNICAL SERVICE	72078	PROFESSIONAL SERVICES	$204.02
SCOTIA RECYCLING (NL) LIMITED	72079	REPAIR PARTS	$140,651.70
IMPRINT SPECIALTY PROMOTIONS LTD	72080	PROMOTIONAL ITEMS	$95.97
HICKMAN DODGE JEEP CHRYSLER	72081	AUTO PARTS	$292.28
ISLAND HOSE & FITTINGS LTD	72082	INDUSTRIAL SUPPLIES	$168.39
PRINTER TECH SOLUTIONS INC.,	72083	REPAIRS TO EQUIPMENT	$1,352.55
CDMV	72084	VETERINARY SUPPLIES	$1,308.75
ATARA EQUIPMENT LTD	72085	AUTO PARTS	$2,247.57
KANSTOR INC.	72086	REPAIR PARTS	$121.41
BOSCH REXROTH CANADA CORP.	72087	ADAPTER	$54.92
LITECO	72088	REPAIR PARTS	$100.73
DILLON CONSULTING LTD.	72089	CONSULTING SERVICES	$26,756.99
BACCALIEU TRAIL ANIMAL HOSPITAL	72090	PROFESSIONAL SERVICES	$3,236.32

MODERN HEAVY CIVIL LIMITED	72091	PROFESSIONAL SERVICES	$68,970.34
MITCHELL'S FARMS INC.,	72092	SCOOPS MULCH	$339.00
TRACE PLANNING & DESIGN	72093	PROFESSIONAL SERVICES	$5,545.42
RENEE PHAIR HEALEY, REGISTERED PSYCH.	72094	COUNSELLING SERVICES	$216.00
KWIK COPY PRINTING	72095	PRINTING SERVICES	$107.45
ROCKET BAKERY & FRESH FOODS	72096	REFRESHMENTS	$294.36
ACE INDUSTRIAL SUPPLIES LTD.	72097	CLEANING SUPPLIES	$337.18
THE CLEANING COMPANY	72098	PROFESSIONAL SERVICES	$460.00
BUDGET CONTRACTING	72099	REFUND SECURITY DEPOSIT	$2,000.00
MARK'S WORK WEARHOUSE	72100	PROTECTIVE CLOTHING	$395.47
JT MARTIN & SONS LTD.	72101	HARDWARE SUPPLIES	$311.54
MARTIN'S FIRE SAFETY LTD.	72102	SAFETY SUPPLIES	$99.44
MCLOUGHLAN SUPPLIES LTD.	72103	ELECTRICAL SUPPLIES	$7,228.94
MIKAN INC.	72104	LABORATORY SUPPLIES	$905.41
MODERN BUSINESS EQUIPMENT LTD.	72105	LEASING OF EQUIPMENT	$53.97
NU-WAY EQUIPMENT RENTALS	72106	RENTAL OF EQUIPMENT	$7,061.37
NEWFOUNDLAND DISTRIBUTORS LTD.	72107	INDUSTRIAL SUPPLIES	$471.70
NEWFOUNDLAND DESIGN ASSOCIATES	72108	PROFESSIONAL SERVICES	$19,736.52
TRC HYDRAULICS INC.	72109	REPAIR PARTS	$339.00
RECREATION NL	72110	SUPPLIES RECREATION	$1,500.00
BELL ALIANT	72111	TELEPHONE SERVICES	$200.43
TOROMONT CAT	72112	AUTO PARTS	$1,331.57
PENNECON ENERGY HYDRAULIC SYSTEMS	72113	PROFESSIONAL SERVICES	$1,243.75
PBA INDUSTRIAL SUPPLIES LTD.	72114	INDUSTRIAL SUPPLIES	$103.34
GCR TIRE CENTRE	72115	TIRES	$12,128.52
PERIDOT SALES LTD.	72116	REPAIR PARTS	$502.03
POWERLITE ELECTRIC LTD.	72117	ELECTRICAL PARTS	$32.65
K & D PRATT LTD.	72118	REPAIR PARTS AND CHEMICALS	$1,678.05
PROFESSIONAL UNIFORMS & MATS INC.	72119	PROTECTIVE CLOTHING	$315.23
RIDEOUT TOOL & MACHINE INC.	72120	TOOLS	$598.90
NAPA ST. JOHN'S 371	72121	AUTO PARTS	$344.46
TRANSCONTINENTAL NEWFOUNDLAND & LABRADOR DI	72122	BROCHURES	$10,013.13
ROYAL FREIGHTLINER LTD	72123	REPAIR PARTS	$108.41
LIFESAVING SOCIETY NFLD & LAB.	72124	AQUATIC RECERTIFICATION	$200.00

S & S SUPPLY LTD. CROSSTOWN RENTALS	72125	REPAIR PARTS	$7,064.08
ST. JOHN'S PORT AUTHORITY	72126	RENTAL OF QUARRY SITE	$5,205.35
ST. JOHN'S VETERINARY HOSPITAL	72127	PROFESSIONAL SERVICES	$1,193.60
ST. JOHN'S TRANSPORTATION COMMISSION	72128	CHARTER SERVICES	$339.00
BIG ERICS INC	72129	SANITARY SUPPLIES	$824.01
SANSOM EQUIPMENT LTD.	72130	REPAIR PARTS	$334.32
STRONGCO	72131	REPAIR PARTS	$415.22
SMITH STOCKLEY LTD.	72132	PLUMBING SUPPLIES	$60.66
SUPERIOR OFFICE INTERIORS LTD.	72133	OFFICE SUPPLIES	$4,596.84
TEMPLETON TRADING INC.	72134	PAINT SUPPLIES	$123.57
TERRA NOVA MOTORS LTD.	72135	PROFESSIONAL SERVICES	$591.63
TORBAY ROAD ANIMAL HOSPITAL	72136	PROFESSIONAL SERVICES	$209.05
TOWER TECH COMMUNICATIONS & SPORTS FIELD LIGHT	72137	NETTING REPAIRS & INSTALLATION	$28,131.35
TUCKER ELECTRONICS LTD.	72138	ELECTRONICS	$503.13
TULKS GLASS & KEY SHOP LTD.	72139	PROFESSIONAL SERVICES	$90.29
UNITED SAIL WORKS LTD.	72140	VINYL COVER	$3,870.25
URBAN CONTRACTING JJ WALSH LTD	72141	PROPERTY REPAIRS	$847.50
WATERWORKS SUPPLIES DIV OF EMCO LTD	72142	REPAIR PARTS	$6,430.65
WEIRS CONSTRUCTION LTD.	72143	REFUND SECURITY DEPOSIT	$5,217.04
WESCO DISTRIBUTION CANADA INC.	72144	REPAIR PARTS	$85.88
SIEMENS CANADA LIMITED	72145	MOTOR/REPAIRS	$38,215.28
WINDCO ENTERPRISES LTD.	72146	PROFESSIONAL SERVICES	$5,397.78
WAL-MART 3092-KELSEY DRIVE	72147	MISCELLANEOUS SUPPLIES	$679.32
XEROX CANADA LTEE	72148	LEASING OF OFFICE EQUIPMENT	$1,106.47
STERLING MARKING PRODUCTS INC.	72149	DOG & CAT TAGS	$512.63
SHALLAWAY	72150	REAL PROGRAM	$1,866.72
PERHAM HOMES	72151	REFUND SECURITY DEPOSIT	$884.75
DR. KARL MISIK	72152	MEDICAL EXAMINATION	$20.00
PLAZA BOWL - YBC	72153	REAL PROGRAM	$440.65
SANI SMART WASTE DISPOSAL SERVICES INC.	72154	DISPOSAL SERVICES	$293.38
GEORGE STREET ASSOCIATION	72155	REFUND KEY DEPOSIT	$50.00
BELL MOBILITY INC. RADIO DIVISION	72156	MAINTENANCE CHARGES & REPAIRS	$96.05
SAFETY SERVICES NEWFOUNDLAND & LABRAOR	72157	WORKSHOP FEES	$760.00
SUBWAY SANDWICHE & SALADS	72158	MEAL ALLOWANCES	$46.90

KETTLE, CYNTHIA	72159	RECREATION PROGRAM REFUND	$195.00
WHEELER, JUNE	72160	RECREATION PROGRAM REFUND	$51.00
METROPOLITAN UNITED	72161	REAL PROGRAM	$100.00
ENCON CONSTRUCTION	72162	REFUND SECURITY DEPOSIT	$2,000.00
STAR OF THE SEA ASSOCIATION	72163	SENIORS OUTREACH PROGRAM	$888.00
CARLA EVANS	72164	RECREATION PROGRAM REFUND	$50.00
WEB WORKS INC.	72165	COMPUTER UPGRADES	$341.83
SMITH, JEAN	72166	RECREATION PROGRAM REFUND	$32.00
PIZZA DELIGHT	72167	REFRESHMENTS	$335.57
HEALEY,CHARLEEN	72168	RECREATION PROGRAM REFUND	$50.00
MAURICE FITZGERALD	72169	RECREATION PROGRAM REFUND	$85.00
BRADLEY & STEPHANIE COADY	72170	REFUND OVERPAYMENT OF TAXES	$50.00
MILTON & IRENE FOWLER	72171	REFUND OVERPAYMENT OF TAXES	$2,224.54
DAVID COCHRANE & AMY WYSE	72172	REFUND OVERPAYMENT OF TAXES	$234.85
GERARD EVANS SR.	72173	REFUND OVERPAYMENT OF TAXES	$1,067.25
JOAN WILLIAMS	72174	REFUND OVERPAYMENT OF TAXES	$122.53
LAWRENCE & MARGARET CONNOLLY	72175	REFUND OVERPAYMENT OF TAXES	$153.58
BAYMOUNT HOMES LTD.	72176	REFUND OVERPAYMENT OF TAXES	$1,454.55
CLARENCE & MONICA WISEMAN	72177	REFUND OVERPAYMENT OF TAXES	$1,252.77
DAVID & KIM BUTT	72178	REFUND OVERPAYMENT OF TAXES	$758.52
OXFAM CANADA	72179	RECREATION PROGRAM REFUND	$40.67
SHARON SHERRIFFS	72180	RECREATION PROGRAM REFUND	$70.00
CATHERINE SWEETAPPLE	72181	RECREATION PROGRAM REFUND	$70.00
ANNE MACK	72182	RECREATION PROGRAM REFUND	$90.00
PAMELA POWER	72183	RECREATION PROGRAM REFUND	$75.00
FRANCIS BARNES	72184	RECREATION PROGRAM REFUND	$19.00
MARIE ANNE BOULAIN	72185	REFUND SECURITY DEPOSIT	$1,500.00
JULIE LEWIS	72186	REAL PROGRAM	$355.00
CARLY FORD	72187	RECREATION PROGRAM REFUND	$20.00
RENJI CHERIAN	72188	RECREATION PROGRAM REFUND	$50.00
KIRKLAND, CAROL	72189	VEHICLE BUSINESS INSURANCE	$303.00
MORRIS, MIKE	72190	RECREATION PROGRAM REFUND	$85.00
LANGMEAD, JENNIFER	72191	MILEAGE	$95.18
NEWMAN, CHELSEA	72192	CLOTHING ALLOWANCE	$75.00

JESSICA PECKHAM	72193	CLOTHING ALLOWANCE	$75.00
FURLONG, LOYOLA	72194	CLOTHING ALLOWANCE	$80.00
GUSHUE, RICK	72195	MILEAGE	$6.81
ORR, JULIE	72196	REIMBURSEMENT TAXI	$34.25
CHARITY LAWRENCE	72197	REIMBURSEMENT TUITION	$770.00
SARAH ROWE	72198	CLOTHING ALLOWANCE	$70.63
GAIL TUCKER	72199	RECREATION PROGRAM REFUND	$220.00
SUSAN BONNELL	72200	REIMBURSEMENT SUBSCRIPTION FOR SOFTW	$175.16
LISA BENNETT	72201	VEHICLE BUSINESS INSURANCE	$325.00
HARRIS & ROOME SUPPLY LIMITED	72202	ELECTRICAL SUPPLIES	$1,871.50
MCCARTHY'S ROOFING LIMITED	72203	PROGRESS PAYMENT	$314,010.95
		Total:	$4,218,880.77

MEMORANDUM

Date: Aug 25th, 2014

To: Mr. Kevin Breen, Mr. Rick Squires, Ms. Elaine Henley

From: Sherri Higgins– Buyer

Re: Council Approval - Tender 2014067 Shop Supplies

The results of Tender 2014067 Shop Supplies are stated below:

Shop Supplies	
TENDER #2014067 – Aug 11, 2014 - 1:00 PM	
Colonial Garage & Distributors Ltd.	$24,844.01
Source Atlantic Limited	$23,599.87
O M B Parts & Industrial Ltd.	$14,128.35
BDI Canada Inc.	$1,786.04
Speedy Automotive Ltd.	$21.56

It is recommended to award this tender to the lowest bidders per section meeting the specifications for various shop supplies, as per the Public Tendering Act.

This contract is for a one year period with the option to extend for two additional one year periods.

Taxes (HST) extra to price quoted

Sherri Higgins
Buyer

MEMORANDUM

Date: Aug 25th, 2014

To: Mr. Kevin Breen, Mr. Rick Squires, Ms. Elaine Henley

From: Sherri Higgins – Buyer

Re: Council Approval - Tender 2014072 Curb Runners

The results of Tender 2014072 for Curb Runners is as follows:

S&S Supply Crosstown Rentals Ltd.	**$ 19, 085.00**
Western Hydraulic	$ 27, 580.00

It is recommended to award this tender to S&S Supply Cross Town Rentals Ltd. The lowest bidder who fully meets specification, as per the Public Tendering Act. Please note price(s) indicated are for a one year term and this contract has the possibility to be extended for two additional one year terms.

Taxes (HST) included with price quoted

Sherri Higgins
Buyer