



AGENDA

PUBLIC SAFETY COMMISSION

CITY OF EASTVALE

Regular Meeting
Tuesday, June 23, 2015
5:00 P.M.

Rosa Parks Elementary School
13830 Whispering Hills Drive
Eastvale, CA 92880

1. CALL TO ORDER

2. ROLL CALL/PLEDGE OF ALLEGIANCE

Commissioners: Christian DaCosta, David Flores, Anwer Khan
Vice-Chair: Chris Hook
Chair: Sean Parilla

3. PUBLIC COMMENT

This is the time when any member of the public may bring a matter to the attention of the Public Safety Commission that is within the jurisdiction of the Commission. The Ralph M. Brown act limits the Commission's and staff's ability to respond to comments on non-agendized matters at the time such comments are made. Thus, your comments may be agendized for a future meeting or referred to staff. The Commission may discuss or ask questions for clarification, if desired, at this time. Although voluntary, we ask that you fill out a "Speaker Request Form", available at the side table. The completed form is to be submitted to the Recording Secretary prior to being heard. Public comment is limited to two (2) minutes each with a maximum of six (6) minutes.

4. PRESENTATIONS

4.1 Monthly Police Department Update

5. CONSENT CALENDAR

5.1 Minutes

RECOMMENDATION: Approve the minutes from the May 26, 2015 Meeting.

5.2 Public Safety, Crime Prevention and Traffic Related Communications

RECOMMENDATION: Receive and file.

5.3 Update on Public Works Department Projects

RECOMMENDATION: Receive and file.

5.4 Waste Management Anti-Scavenging Sticker

RECOMMENDATION: Receive and file.

6. BUSINESS ITEMS

6.1 Status Report on Schleisman Road and Dairy Street/Raymond Drive Traffic Study & Speed Survey Results

RECOMMENDATION: Receive report for discussion.

6.2 Vaping and E-Cigarettes

RECOMMENDATION: Discuss and provide direction to staff.

7. FUTURE AGENDA ITEMS

8. CITY STAFF REPORT

9. COMMISSION COMMUNICATIONS

10. ADJOURNMENT

The next regular meeting of the Eastvale Public Safety Commission will be held on July 28, 2015 at 6:00 p.m. at Rosa Parks Elementary School.



In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the City of Eastvale. Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

I, Marc Donohue, City Clerk or my designee, hereby certify that a true and correct, accurate copy of the foregoing agenda was posted seventy-two (72) hours prior to the meeting, per Government Code 54954.2, at the following locations: City Hall, 12363 Limonite Ave. Suite 910; Rosa Parks Elementary School, 13830 Whispering Hills Drive; Eastvale Library, 7447 Scholar Way; and on the City's website (www.eastvaleca.gov)

MINUTES
MEETING OF THE PUBLIC SAFETY COMMISSION
OF THE CITY OF EASTVALE

Tuesday, May 26, 2015

6:00 P.M.

Rosa Parks Elementary, 13830 Whispering Hills Drive, Eastvale, CA 92880

1. **CALL TO ORDER:** 6:02 p.m.

2. **ROLL CALL/PLEDGE OF ALLEGIANCE:**

Commissioners Present – Commissioners Flores, Khan, Hook, and Chair Parilla

Commissioners Absent – Commissioner DaCosta

Commissioner DaCosta arrived at 6:03 p.m.

Staff Members Present – City Manager Nissen, Deputy City Engineer Indrawan, Assistant Police Chief Forbes, Fire Chief Williams, and City Clerk Donohue.

The Pledge of Allegiance was presented by Chair Parilla.

The Commission requested a moment of silence in remembrance of Joe Semon, Traffic Engineer who passed away on May 13, 2015.

3. **PUBLIC COMMENT:**

There was no public comment.

4. **PRESENTATIONS:**

4.1 **Monthly Police Department Update**

Recommendation: Receive and file.

Lieutenant Forbes provided the staff report for this item.

He provided a summary of calls for service and traffic statistics for the month, including collisions and citations for the period. He noted that the No Right Turn signs around the Estancia Community near the high school have been corrected and are being enforced. It was noted that vehicle burglaries at the 24-Hour Fitness parking lot have decreased due to high visibility patrol and education of management at the business. He noted there would be a DUI checkpoint on June 6. Coffee with a Cop would be held on June 17th. He noted that a truancy sweep was conducted recently and reviewed the statistics from that operation.

There was discussion regarding the vehicle burglaries at 24-Hour Fitness.

Commissioner Flores commended the Sheriff's Department on the recent vandalism arrests made.

5. CONSENT CALENDAR:

5.1 Minutes –

Recommendation: Approve the minutes from the April 28, 2015 Meeting.

5.2 Public Safety, Crime Prevention and Traffic Related Communications –

Recommendation: Receive and file.

5.3 Update on Public Works Department Projects –

Recommendation: Receive and file.

Chair Parilla inquired about the “at-risk review” for the 99 Cent Only Store.

Deputy City Engineer Indrawan noted that “at-risk review” is common during development when an applicant is trying to complete a project ahead of schedule. Applicant may request City staff to accept plan checks or grading and improvement plans at the risk of the application being denied or changed by Planning Commission or City Council.

Motion: Moved by DaCosta, seconded by Khan, to receive and file the Consent Calendar.

Motion carried 5-0 with Flores, DaCosta, Khan, Hook, and Chair Parilla voting aye.

6. BUSINESS ITEMS:

6.1 E-Cigarettes and Vapor

Recommendation: Receive verbal update from staff and discuss.

City Manager Nissen presented the staff report for this item. She noted that both JCSD and CNUSD have a policy regarding E-cigarettes and vapor and provided a copy of those policies for review.

Vice Chair Hook requested a sub-committee be formed or a request that Council consider adopting a policy for restricting use of these devices in parking lots, stores, and around certain areas.

City Manager Nissen noted that enforcement may be an issue due to limited staffing.

There was further discussion regarding enforcement at the parks and schools. Discussion ensued regarding any policies in place at retail establishments related to e-cigarettes and vaping.

Commissioner Hook requested Staff conduct additional research regarding a possible citywide policy.

There was discussion regarding what exactly the definition of “smoking” is. There was a consensus to continue the item and have staff research the definition of “smoking”.

6.2 **Truck Traffic Regulations – Truck Route Plan**

Recommendation: Receive report for discussion.

Deputy City Engineer Indrawan presented the staff report for this item.

He reviewed existing restrictions for commercial vehicles on highways, streets, bridges and local streets. He noted that funding was not yet available for truck route studies. He noted that some developers with upcoming projects have conditions of approval requiring they provide funding for a truck route study. He noted that if the truck route study was conducted prior to collecting those funds, the City would need to seek reimbursement after the fact from developers.

There was discussion regarding the ongoing projects around the city that could contribute funding for a truck route study, costs of a study, and chances of recouping costs of the study.

City Manager Nissen noted that the City could not go back and back-charge projects if it wasn't identified in the conditions of approval.

Chair Parilla stated that it was not prudent to ask City Council to provide funding from the general fund for a truck route study at a risk of not being reimbursed by developers.

There was a consensus that a recommendation would be made to City Council to emphasize the need to condition future commercial or industrial developments to participate in the truck routes.

Deputy City Engineer Indrawan noted that staff would share the conditions of the Providence Business Park with the Commission.

6.3 **Schleisman Road and Dairy Street**

Recommendation: Receive verbal update from staff and provide direction.

Deputy City Engineer Indrawan presented the staff report for this item.

He noted that a speed radar trailer was added, additional signage was posted, landscape was trimmed back, and lanes were re-stripped on Schleisman at Dairy and Raymond. Additionally, a speed survey would be conducted and a speed limit sign posted upon completion of the study.

Assistant Police Chief Forbes noted that turning was a factor in the three traffic collisions reported since the road opened and all were determined to be yielding violations.

City Manager Nissen reviewed other possible improvements being considered for the location.

Deputy City Engineer Indrawan noted that a meeting would be held to discuss the road and visibility improvements already made and other options to improve safety at the location. He noted that once the speed survey is complete, the speed limit will be posted and enforcement would begin.

7. FUTURE AGENDA ITEMS:

City Manager Nissen noted that staff would return with additional research on vaping & e-cigarettes as well as language regarding conditioning future projects to financially participate in the truck route survey. She noted that the speed survey and Bicycle Master Plan would be brought as receive and file items for the Commission.

8. CITY STAFF REPORT:

City Manager Nissen invited Commissioners to the City Council meeting and the Orange Theory Fitness Ribbon Cutting Ceremony.

She noted that the Commission was invited to the Annual Academic Awards Banquet at ERHS.

She extended an offer to Commissioners by the Riverside County Sheriff's Department to participate in a presentation regarding the Sheriff's Department contract.

Deputy City Engineer Indrawan noted that the City would be pursuing the ATP Active Transportation Program grant and requested a letter of support from the Commission. He reviewed the proposed locations and uses for grant money, if received.

Discussion ensued regarding possible future improvements at some of the intersections crossing Limonite.

9. COMMISSION COMMUNICATIONS:

Commissioner Khan congratulated Chief Williams on her new position and recognized the passing of Joe Semon and noted that he would be missed.

Commissioner Flores and DaCosta echoed the thoughts of Commissioner Khan.

10. ADJOURNMENT:

There being no further business, the meeting was adjourned at 7:30 p.m.

*Submitted by Margo Wuence, Recording Secretary
Reviewed and edited by Marc Donohue, City Clerk*



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 5.2

DATE: JUNE 23, 2015

TO: HONORABLE CHAIRMAN AND COMMISSIONERS

FROM: DANIELLA MCCLISTER, REPRESENTATIVE OF THE CITY
MANAGER'S OFFICE

SUBJECT: PUBLIC SAFETY, CRIME PREVENTION AND TRAFFIC
RELATED COMMUNICATIONS

RECOMMENDATION: RECEIVE AND FILE

BACKGROUND

From May 22, 2015 to June 16, 2015 there have been approximately twelve (12) announcements and/or press releases published on the City's website and social media platforms. These communications relate to Sheriff's Department and CalFire activity, crime prevention and awareness, as well as traffic or construction projects that may impact traffic conditions in Eastvale.

DISCUSSION

The announcements and/or press releases have been published on the City's website, sent out through e-notification, and posted on social media including: Facebook, Twitter, LinkedIn, and Instagram (when appropriate).

Citizens are encouraged to sign up for the City's e-notification service so that they may receive emailed updates from the City related to meeting agenda, press releases, community events, crime prevention and awareness, employment opportunities, traffic alerts and more.

The announcements and/or press releases are as follows along with the published date:

- Controlled Burn in Norco 6/16/2015
- Sheriff Approves Body Worn Cameras (BWC) 6/15/2015
- Medical Operations CERT Refresher 6/10/2015
- Coffee with a Cop 6/8/2015
- Counterfeit Check Cashing Scam 6/7/2015
- Special Olympic Torch Run 6/2/2015
- Leave Fireworks to the Professionals 6/1/2015
- SCE Cautions Customers to Stay Alert Against Utility Bill Scam 6/1/2015
- Reminder: 91 Corona Squeeze 5/30/2015
- Warrant Service Operation 5/30/2015



PUBLIC SAFETY COMMISSION STAFF REPORT

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- DUI Driver's License Checkpoint 5/26/2015
- Night Time Click it or Ticket 5/25/2015

FISCAL IMPACT - None

ATTACHMENT - None

Prepared by: Daniella McClister, Representative of the City Manager's Office
Reviewed by: Michele Nissen, City Manager



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 5.3

DATE: JUNE 23, 2015
TO: HONORABLE CHAIR AND COMMISSIONERS
FROM: JOE INDRAWAN, DEPUTY CITY ENGINEER
SUBJECT: UPDATE ON PUBLIC WORKS DEPARTMENT PROJECTS

RECOMMENDATION: RECEIVE AND FILE

REPORT SUMMARY:

Development Projects

Residential Projects Under Construction:

Tract 36382 – Lennar Homes (Eastvale Project # 12-0275)

- Location: South side of Citrus Street between Scholar Way at Sumner Ave
 - Public Improvement 90% complete
 - Homes under construction
 - Few phases are occupied
 - “No-Right Turn, 7-9am” symbol signs were added for eastbound Citrus Street traffic at Granja Vista Del Rio/ H.S. Driveway beginning May 6, 2015.

Tract 34014 – DR Horton (Eastvale Project # 13-0395)

- Location: Southeast corner of Schleisman Road at Scholar Way
 - Public Improvement 90% complete
 - Homes under construction
 - Few phases are occupied
 - Schleisman Rd was opened on March 29th for traffic.

Tract 36423 – DR Horton (Eastvale Project # 11-0558)

- Location: Northeast corner of Archibald Avenue at 65th Street
 - Public Improvement 90% complete
 - Homes under construction
 - Few phases are occupied
 - Southbound Archibald Avenue north of 65th widening is pending SCE pole relocation
 -

Tract 32821-1 – KB Home (Eastvale Project # 10-0124)



PUBLIC SAFETY COMMISSION STAFF REPORT

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- Location: Northwest corner of Limonite at Scholar Way
 - Public Improvement 90% complete
 - Homes under construction
 - Few phases are occupied

Tract 31406 – Meritage Homes (Eastvale Project # 10-0140)

- Location: Southwest corner of Archibald Avenue at River Road
 - Punch List has been issued

Tract 31476 – Beazer Homes (Eastvale Project # 12-0679)

- Location: Northeast corner of Hellman Avenue at Walters Street
 - Punch List has been issued

Tract 29997 – Lennar Homes (Eastvale Project # 12-0297)

- Southeast corner of Hellman Avenue at Chandler
 - Public Improvements under construction
 - Production homes under construction
 - Hellman Street will be reopened in May 2015

Tract 30971 – KB Home (Eastvale Project # 10-0016)

- Location: Schleisman Road at Kenton Place
 - Punch List Repairs

TTM 36696 – William Lyons (220 Residential Homes)

- Location: Limonite Avenue behind 24 Hour Fitness
- Final Plans Approved
- Began Grading Operations on April 2015
- Building permits for Model Homes have been issued

Residential Projects in Entitlement Stage:

Stratham Homes – Zone Change from Commercial to Residential – Approved with condition to match density to surrounding neighborhoods

- Location: Southeast corner of Schleisman Road at Sumner Avenue

TTM 32797 – Stratham Homes (319 Units)

- Location: Northwest corner of Limonite Avenue at Harrison Avenue



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 5.3

Commercial Projects Under Construction or Plan Review:

Eastvale Marketplace at the Enclave

- Location: Southwest corner of Archibald Avenue at Schleisman Road
 - Bank of America
 - Under Construction
 - Daycare
 - Grading to commence June 2015

Ronald Reagan Elementary School

- Location: Northeast corner of Fieldmaster Street at Cherry Creek Circle
 - School opening is scheduled for July 2015

Providence Business Park

- Location: West side of Archibald Avenue south of Limonite Avenue
 - Plan review is underway

Chevron Gas Station (former Arco Gas Station)

- Location: Southeast corner of Hamner Avenue at Riverside Drive
 - Plan review is underway

Goodman Commerce Center

- Location: Northeast corner of Hamner Avenue at Bellegrave Avenue
 - Mass Grading Permit was Issued on April 16, 2015
 - Pre-Grade Meeting has been scheduled for the last week in April 2015
 - Ground Breaking Ceremony held on May 20, 2015
 - Currently Grading the site

Panera at Eastvale Gateway South

- Location: Limonite Avenue behind Chevron Gas Station
 - Onsite Improvement Plans approved
 - Grading and On-Site improvement permit was issued on April 7, 2015
 - Building permit has been issued

Eastvale Marketplace

- Location: Limonite Avenue and Sumner Ave
 - Plan review is underway



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 5.3

Commercial Projects in Entitlement Stage:

Wal-Mart

- Location: Southeast corner of Archibald Avenue at Limonite Avenue
 - EIR & Report submitted and under review.

The Ranch

- Location: Northeast corner of Kimball Avenue at Hellman Avenue
 - CEQA/EIR is underway

Grainger Site

- Location: Northeast corner of Cantu-Galleano Ranch Road at Hamner Avenue
 - Proposed development plan review is underway

Vantage Point Church

- Location: Northeast corner of Archibald Avenue at Prado Basin Park Road
 - Project is in its preliminary planning

99cent Only Store

- Location: Northwest corner of Hamner Avenue at "A" Street
 - Project is in its preliminary planning
 - Project Civil plans submitted for "At-Risk" review
 - Project will be taken to Planning Commission on June 17, 2015 with approval recommendation

Capital Improvement Projects

Street Rehabilitation:

- Chandler Street Reconstruction from Hellman Avenue to Hall Avenue
 - Project to be advertised for bids in July 2015
- River Road Resurfacing from Hellman Avenue to Baron Road
 - Project to be advertised for bids in July 2015
- Hamner Avenue Resurfacing from Riverside Drive to Samantha Street
 - Waiting for CDA Water Line project to be completed; Award August 2015
- Hamner Avenue Resurfacing from Samantha Street to Cantu-Galleano (city side only)
 - Waiting for CDA Water Line project to be completed; Award August 2015
- Hamner Avenue Resurfacing from Limonite Avenue to s/o 68th Street
 - Waiting for CDA Water Line project to be completed; Award August 2015
- Milliken Avenue Resurfacing from SR60 to Riverside Drive
 - Waiting for CDA Water Line project to be completed; Award August 2015



PUBLIC SAFETY COMMISSION STAFF REPORT

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- Schleisman Road from Moonflower Street to Sumner Avenue
 - Project advertised for bids in May 2015.
 - Bids were due May 28, 2015.
 - Contract will be taken to June 24 City Council Meeting for Award recommendation

Slurry Seal Project:

Various Residential Streets and Archibald Avenue from River Road to Prado Basin Park Road

- Currently working on punch-list items
- Will be closing out project in June 2015

Sidewalk Improvements (previously CDBG)

- Chandler Street from Archibald Avenue to Hall Road;
Archibald Avenue from Chandler Street to Flood Control Channel; and
Walter Street from Hall Road to Cucamonga Creek
 - Final punch list
 - Will be closing out project in June 2015

Traffic Signals:

Traffic Signal Synchronization

- Location: Hamner Avenue from Schleisman Road to Eastvale Gateway
 - Design is complete
 - Project Invitation to Bid, Plans & Specifications was sent to Caltrans on June 15, 2015 for authorization to release

Bikeway Master Plan: (SCAG funded)

- Plan is in its final stage
- Community Meeting is scheduled for July 14, 2015 – Location TBD

Fire Station No. 2:

- Site Plan, Floor Plan and Elevation have been completed
- Construction drawings and bid package preparation is under way
- Cal-Fire crews demolished existing building – Completed May 19, 2015
- Construction Drawing review is underway

Zone 2 Storm Drain:

- Location: various locations
 - Request for Proposal (RFP) for design & engineering wasted posted on April 10, 2015 and Proposals were received May 6, 2015.



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 5.3

- City Council approved Professional Services Agreement with Anderson Penna on the June 10th meeting.
- Design of Storm Drain Facilities is underway

Milliken Grade Separation:

- Milliken Ave north of Greystone is closed until March 2017

Encroachment Permits

Various Citywide Encroachment Permit and Block Party application Review, Issuance and Inspections

Chino Basin Desalter Authority

- Hamner Avenue 30" Water Line Project from Mississippi Street to Riverside Drive
 - 97% complete
 - Trench alignment has been repaved and striping completed

Jurupa Community Services District – Sewer

- Area B Trunk Sewer Project on Archibald Avenue from 65th to Bellegrave Avenue and on Bellegrave Avenue from Archibald Avenue to East City Limits
 - 98% complete
 - Working on punch list items

23 Encroachment permits pending out of 293 permits

Maintenance & Operations/Other

- Address concerns with Citywide Traffic Issues
- Resident concerns/reports
- Weed abatement
- Citywide streets, sidewalks, striping & signage maintenance
- Coordination with Projects in Surrounding Cities
 - New Model Colony
 - City of Ontario – Archibald north of Limonite and West side of Hamner north of Bellegrave
 - City of Ontario – West side of Hamner between Bellegrave and Riverside
 - City of Ontario – Extension of Cantu-Galleano Ranch Road west of Hamner Avenue to Sumner Avenue/Haven
 - Lewis Properties
 - City of Chino – Southwest corner of Hellman Avenue at Schleisman Road/Pine Avenue



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 5.3

FISCAL IMPACT - None

Prepared by: Joe Indrawan, Deputy City Engineer

Reviewed by: Michele Nissen, City Manager



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 5.4

DATE: JUNE 23, 2015

TO: HONORABLE CHAIR AND COMMISSIONERS

FROM: GARY TRAN, SENIOR ADMINISTRATIVE ANALYST

SUBJECT: WASTE MANAGEMENT ANTI-SCAVENGING STICKER

RECOMMENDATION: RECEIVE AND FILE

BACKGROUND

Eastvale Municipal Code Section 8.48 et seq (Ord. No. 2012-13, adopted October 24, 2012) prohibits removal of solid waste or recyclables from any solid waste or other collection container. Notwithstanding this prohibition scavenging from solid waste and collection containers still occurs.

DISCUSSION

The City hopes that scavenging will be reduced with greater awareness of the City's existing Anti-Scavenging Ordinance. To promote awareness the City has requested that Waste Management, the City's Franchise waste hauler, provide the City with a bilingual (English and Spanish) Anti-Scavenging Sticker campaign. The placement of Anti-Scavenging Stickers on the recycling bins was previously included in the implementation of the program.

The Campaign intends to provide Eastvale residents with notice of the City's Anti-Scavenging Ordinance and to draw attention that scavenging is an infraction and punishable by a fine up to \$500. Anti-Scavenging stickers will be placed by Waste Management on all newly delivered recycling containers and recycling container exchanges. Anti-Scavenging stickers will also be available at City Hall for general distribution to residents of Eastvale (limit of one sticker per household). To assist the Anti-Scavenging Sticker campaign, the City will continue to disseminate the message and sticker availability via the City Website, e-notification, and social media.

FISCAL IMPACT

Waste Management will be supplying the stickers for this campaign at no cost to the City. If the campaign is successful in reducing scavenging, the City will see a slight increase in Franchise fees as diversion rates increase.



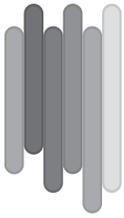
PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 5.4

ATTACHMENT

1. Approved Anti-Scavenging Sticker
2. Eastvale Municipal Code § 8.48 et seq

Prepared by: Gary Tran, Senior Administrative Analyst
Reviewed by: Michele Nissen, City Manager



Screen Graphics

1801 N. Andrews Avenue
Pompano Beach, FL
33069

Integrated Digital & Screen Print Solutions

CUSTOMER: WM Corona

SIZE: 11.992" x 5.618" DIE: 1791
width x height

COLOR(S): Black on Yellow Vinyl

ARTIST: JW DATE: 6/11/15

FILE: WM Corona Eastvale Code.cdr

2

ART APPROVAL

Note: Your Signature is your approval. Screen Graphics will not be responsible for errors after proof is signed!

SIZE COLOR SPELLING
 OK AS IS REPROOF OK/WITH CHANGES

DATE: _____

SIGN: _____

Your electronic signature

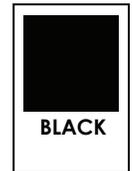
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Fax: (954) 497-1385

SCREEN PRINT DIGITAL PRINT HAND TRIM DIGITAL CUT CORNERS SQUARE CORNERS ROUND SPECIAL FINISHING:

CUSTOMER COLORS & SEPARATION ORDER



! WARNING

NO SCAVENGING

Do not remove any material from this container!!

PUNISHABLE BY FINE UP TO \$500

Eastvale Municipal Code Sec 8.48 et seq

SCREEN GRAPHICS FT. LAUD., FL 1-800-346-4420 WWW.WASTEGRAPHICS.COM

! ADVERTENCIA

NO ESCARBE EN LA BASURA

No saque ningun articulo de este contenedor!

ES CASTIGADO POR UNA MULTA DE HASTA \$500

Eastvale Municipal Code Sec 8.48 et seq

90770 1791A 41563

Comments:

CHAPTER 8.48. - PROHIBITION ON SCAVENGING FROM AND TAMPERING WITH PUBLIC CONTAINERS

Sec. 8.48.010. - Definitions.

Scavenging. removal of solid waste or recyclables from an area for the purpose of converting the solid waste or recyclables.

Public container. means a cart, bin, roll-off box, or other receptacle for solid waste, recyclable material or green waste intended for public use from the location where it is placed and maintained by the city or its authorized designee, for the authorized collection of solid waste or recyclables. For purposes of illustration only, a public container can be:

- (1) A solid waste or recyclable bin placed out from the curb for collection in residential areas; or
- (2) A roll off box or metal receptacle placed in enclosed areas on commercial property; or
- (3) Bins or receptacles for solid waste or recyclables placed in public areas such as parks or similar recreational areas.

(Ord. No. 2012-13, § 1, 10-24-2012)

Sec. 8.48.020. - Prohibition on scavenging from and tampering with public containers.

(a) It shall be unlawful for any person to do any of the following:

- (1) Scavenge from, tamper with, move, steal, tip, deface, or destroy any solid waste collection container, or the contents thereof;
- (2) Scavenge from, tamper with, move, steal, tip, deface, or destroy any collection container for discarded recyclable materials, or the contents thereof.

(b) No person shall remove, without lawful authority, any container intended for public use from the location where it is placed and maintained by the city or its authorized designee, for the authorized collection of solid waste or recyclables.

(Ord. No. 2012-13, § 1, 10-24-2012)

Sec. 8.48.030. - Enforcement.

(a) It is unlawful for any person to violate any provision or to fail to comply with any of the requirements of this chapter. In addition to other remedies provided by law, any person violating any provision of this chapter for failing to comply with any of the requirements is deemed guilty of an infraction with in the manner provided in section 1.01.200.

(b) Each person shall be deemed guilty of a separate offense for each and every day, or any portion thereof, during which any violation of or failure to comply with any of the provisions of this chapter is committed, continued or permitted by such person, and each instance shall be deemed punishable as provided in this chapter.

(c) Each infraction is punishable by:

- (1) A fine not exceeding \$100.00 for the first violation;
- (2) A fine not exceeding \$200.00 for the second violation within one-year;
- (3) A fine not exceeding \$500.00 for each additional violation within one-year.

(d)

In addition to the fines set forth herein, the city shall confiscate all solid waste or recyclables from any person in violation of or fails to comply with any of the requirements of this chapter.

(Ord. No. 2012-13, § 1, 10-24-2012)



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 6.1

DATE: JUNE 23, 2015

TO: HONORABLE CHAIR AND COMMISSIONERS

FROM: JOE INDRAWAN, DEPUTY CITY ENGINEER

SUBJECT: STATUS REPORT ON SCHLEISMAN ROAD AND DAIRY STREET/RAYMOND DRIVE TRAFFIC STUDY & SPEED SURVEY RESULTS

RECOMMENDATION: RECEIVE AND FILE

BACKGROUND

Schleisman Road (formerly "A" Street) west of Hamner Avenue had been a "Dead End" road just west of Dairy Street/Raymond Drive since its construction by adjacent developments. On April 3, 2015, a new segment of Schleisman Road was constructed by new development on the southeast corner of Scholar Way and Schleisman Road. This new segment of Schleisman Road, re-aligned the roadway to join the existing Schleisman Road (formerly "A" Street) just west of Dairy Street/Raymond Drive. At the same time, Riverboat Drive (formerly Schleisman Road) east of Scholar Way was closed off.

DISCUSSION

As a result of the realignment of Schleisman Road east of Scholar Way, traffic patterns changed for east and west bound directions. Schleisman Road (formerly "A" Street) between Dairy Street/Raymond Drive and Hamner Avenue went from having a local street feel to an open major arterial roadway. Since the extension and realignment of Schleisman Road from Scholar Way to west of Dairy Street/Raymond Drive, there has been three reported traffic accidents at the intersection of Schleisman Road and Dairy Street/Raymond Drive. As a result, Public Works and Police Departments jointly studied the reported traffic accident history at the intersection of Schleisman Road and Dairy Street/Raymond Drive. Additionally, since the initial report of accident at this intersection, Public Works has implemented the following:

- Placed speed radar trailer to warn motorists of their speed limits
- Installed "Cross Traffic Does Not Stop" signs on the north and south approach of Dairy Street/Raymond Drive at its intersection with Schleisman Road
- Removed the third lane (the curb lane) on Schleisman Road to improve sight distance when vehicles exit Dairy Street/Raymond Drive
- Conducted speed survey to establish a speed limit on Schleisman Road between Scholar Way and Hamner Avenue. Radar speed study was completed the week of May 28th and an ordinance establishing a recommended speed limit was taken to the City Council on June 10, 2015 for a first reading. The second reading will take place on the June 24th City



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 6.1

Council meeting. Speed limit signs will be implemented within a week after the second reading.

On May 27, 2015, Public Works and Police Departments met to review the history of the reported accidents to determine the primary cause and to make recommendations on how to improve the existing conditions. The following is summary of the accidents reported:

Date	Vehicle 1 Direction	Vehicle 2 Direction	Injuries	Primary Cause
04/06/2015	N/B Dairy St to E/B Schleisman Rd	E/B Schleisman Rd	None	Failure to Yield
04/9/2015	W/B Schleisman Rd to S/B Dairy St	E/B Schleisman Rd	2	Failure to Yield
05/20/2015	N/B Dairy St to N/B Raymond Dr	W/B Schleisman Rd	3	Failure to Yield

After considerable discussion Public Works and Police recommend the following to reduce the accident rate at Schleisman Road and Dairy Street/Raymond Drive:

- Provide additional traffic enforcement as resources become available
- Continue to place the mobile speed radar trailer for both directions on Schleisman Road
- Conduct a neighborhood meeting with residents that live north and south of Schleisman Road at Dairy Street/Raymond Drive Intersection. The meeting will be held on June 30, 2015; location to be determined. The purpose of the meeting is to reach out and inform the residents of the City's effort to improve traffic safety and answer questions.
- Public Works and Police will continue to examine other measures to improve traffic safety.

FISCAL IMPACT - None

STRATEGIC PLAN IMPACT

Objective 4.5 – Improve traffic circulation through street design, policies and procedures.

Prepared by: Joe Indrawan, Deputy City Engineer
Reviewed by: John Cavanaugh, City Attorney
Reviewed by: Michele Nissen, City Manager



PUBLIC SAFETY COMMISSION STAFF REPORT

ITEM 6.2

DATE: JUNE 23, 2015

TO: HONORABLE CHAIRMAN AND COMMISSIONERS

FROM: MICHELE NISSEN, CITY MANAGER

SUBJECT: VAPING AND E-CIGARETTES

RECOMMENDATION: DISCUSS AND PROVIDE DIRECTION TO STAFF.

BACKGROUND

At the May 26, 2015 Public Safety Commission, the commissioners requested additional research about vaping and electronic cigarettes.

DISCUSSION:

Staff has provided several documents with the staff report for discussion purposes and to ascertain direction on how the commission wishes to proceed.

FISCAL IMPACT - None

ATTACHMENT

1. FEMA Electronic Cigarette Fires and Explosions
2. ANRF U.S. State and Local Laws Regulating Use of Electronic Cigarettes
3. ANRF Electronic Smoking Devices and Secondhand Aerosol
4. ANRF Electronic Smoking Devices (ESDs) and Smokefree Laws

Prepared by: Michele Nissen, City Manager

Electronic Smoking Devices (ESDs) and Smokefree Laws



www.no-smoke.org/ecigs.html

What are Electronic Smoking Devices?

Electronic smoking devices, often called **e-cigarettes**, heat and vaporize a solution that typically contains nicotine, and are often designed to mimic the look and feel of a real cigarette, while others resemble pens or other innocuous objects.

The devices are metal or plastic tubes that contain a cartridge filled with a liquid that is vaporized by a battery-powered heating element. The aerosol is inhaled by the user when they draw on the device, as they would a regular cigarette. The user then exhales a cloud of secondhand aerosol which includes toxins and other pollutants.

Electronic smoking devices are currently unregulated products. Most electronic smoking devices contain nicotine, and some companies claim to sell nicotine-free cartridges. They come in a wide variety of designs, flavors, and nicotine levels. These are not one uniform product but hundreds of different products.

Sample of Electronic Smoking Devices:

Disposable e-cigarette:



Rechargeable e-cigarette:



Disposable hookah pen-style device:



Pen-style rechargeable device:



Tank-style rechargeable device:



Adapted from: Grana, Benowitz, & Glantz. (2013). Background Paper on E-cigarettes (Electronic Nicotine Delivery Systems). UCSF Center for Tobacco Control Research and Education. Hookah pen source: imperialcigs.com

Electronic Smoking Device Aerosol is Not Water Vapor

Supporters claim that electronic smoking devices release “nothing but water vapor.” However, **water is not an ingredient in electronic smoking devices.**

The “smoke” you see is NOT a “vapor”: it is an aerosol containing toxins like those listed in the infographic (below) from the Chicago Department of Public Health.



The aerosol (incorrectly called vapor) contains **nicotine, hazardous ultrafine particles** that lodge deeply in the lungs of nonsmokers, and **toxins** known to cause cancer. This is why it is not appropriate to use these products in smokefree environments, such as workplaces.

Electronic smoking devices are unregulated products that have no requirements for ingredient disclosure, accurate labeling or quality control.

Electronic smoking devices are called:

- ◇ Electronic cigarette
- ◇ E-cigarette
- ◇ E-hookah
- ◇ E-vapor device
- ◇ Hookah pen
- ◇ Personal vaporizer
- ◇ Vape Pen/Vapor pen
- ◇ Vapor cigarette
- ◇ And more!

Electronic Smoking Devices: The Facts

Electronic Smoking Devices Are Not Emission-Free

The first peer-reviewed study to look at exposure to aerosol from electronic smoking devices (ESDs) in real-use conditions found that non-smokers who were exposed to conventional cigarette smoke and ESD aerosol absorbed similar levels of nicotine.

"Cigarettes vs. e-cigarettes: Passive exposure at home measured by means of airborne marker and biomarkers." *Environmental Research*, Volume 135, November 2014.

TABLE 1 Chemical emissions of selected compounds from e-cigarettes for exposure analyses.

CHEMICAL	CHEMICAL EMISSIONS (µG/150 PUFFS – 70 ML/PUFF) INDIRECT EXPOSURE	
	Minimum	Maximum
ACETALDEHYDE	2.0	13.6
ACROLEIN	<0.02	41.9
FORMALDEHYDE	3.2	56.1
CADMIUM	<0.04	0.22
LEAD	0.03	0.57
NICKEL	0.11	0.29
NICOTINE	5,770	19,060
NNK ^a	<0.0001	0.028
PROPYLENE GLYCOL	250,950	828,750

Offermann, Bud. "The Hazards of E-Cigarettes." *ASHRAE Journal*, June 2014.

"If you are around somebody who is using e-cigarettes, you are breathing an aerosol of exhaled nicotine, ultra-fine particles, volatile organic compounds, and other toxins."

— Dr. Stanton Glantz, Director for the Center for Tobacco Control Research and Education, UCSF

Tempting a New Generation into Nicotine Addiction

ESDs are not a proven smoking cessation device; they are an alternative nicotine delivery device that will maintain or restore the habit, and can hook a new generation addicted to nicotine. ESD proponents are deceptively marketing the products to the public—especially to young adults via online media—as a "safe" alternative to smoking and an easy way to quit smoking tobacco cigarettes.



Source: www.smokelessdelite.com

ESDs come in an impossibly long list of enticing flavors that historically have appealed to youth, from **Gummy Bear** to **Bubble Gum** to **Vanilla Cupcake** to **Lemon Chiffon Pie**. Rechargeable ESDs allow users to mix their own "e-juice" to create their own flavor combinations and potentially create higher nicotine levels.

A June 2014 study found that some chemicals used as flavorings in ESD liquid are approved by the FDA for food use (ingestion), but they are not approved for inhalation, and are, in fact, associated with respiratory disease when inhaled. **Remember: ESD's are not regulated by the FDA.**

- ◆ Half of middle and high school students (13.1 million) were aware of e-cigarettes, 6.8% (1.8 million) had ever used e-cigarettes, and 2.1% (550,000) reported having used e-cigarettes in the past thirty days.
- ◆ One in three students perceived e-cigarettes as being less harmful than conventional cigarettes and these students were more likely to have used e-cigarettes.

Source: <http://www.fda.gov/TobaccoProducts/ProtectingKidsfromTobacco/ucm405173.htm>

Cities are Including Electronic Smoking Devices in Smokefree Laws

As of October 1, 225 U.S. municipalities and three states include electronic smoking devices (ESDs) as products that are prohibited from use in smokefree environments. See the full list at www.no-smoke.org/pdf/ecigslaws.pdf.

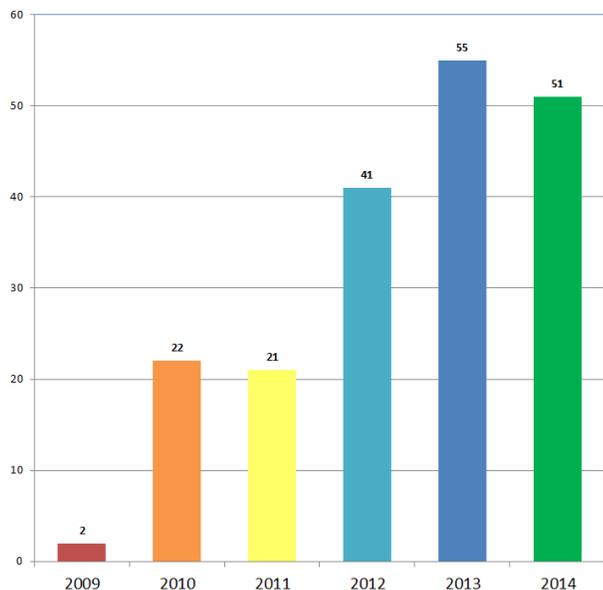
From **New York City** to **Indianapolis**, and **Chicago** to **Los Angeles**, communities are choosing to expand their smokefree air laws to not allow the use of ESDs in all smokefree environments (indoors and outdoors) so that workers & the public don't have to breathe the toxic aerosol that they emit.

Other examples of cities addressing ESDs in smokefree workplace laws including **Bessemer, AL**; **Madison, KY**; **Prentiss, MS**; and **Waxahachie, TX**.

Americans for Nonsmokers' Rights and our public health partners encourage municipalities and states to prohibit the use of ESDs in all smokefree venues, where people may be exposed to the secondhand aerosol they emit.

It is the right and responsibility of our elected officials to take action to protect public health and safety.

Number of Smokefree ESD Laws by Year



How Can My Community Ensure Smokefree Workplaces Stay that Way?

It's very simple. If your community has a 100% smoke-free air law, the law can be amended by adding a definition of "electronic smoking device" and amending the definition of "smoking" to include electronic smoking devices (ESDs).

If your community is protected by a strong statewide smokefree law, then you can adopt a law to prohibit the use of ESDs wherever the state law prohibits smoking. This is also an opportunity to close any gaps that may exist in your state smokefree law.

If your community is not yet protected by a 100% smoke-free air law for all workplaces and public places, now is a great opportunity to consider adopting a law that addresses both tobacco smoking and ESD use in those spaces.

You can find definitions in ANR's model law for smoke-free workplaces and public places at www.no-smoke.org/pdf/modelordinance.pdf



Sign for Chicago's smokefree law, which includes ESD use.

What is the FDA doing about Electronic Smoking Devices?

While the FDA can and should regulate electronic smoking devices as tobacco products, they do not have the authority to address where the products may be used. Cities and states can and are enacting laws that regulate when and where ESDs can be used, as well as laws that regulate sales to minors and where the product can be sold. In other words, city and state lawmakers should not wait for the FDA to address these products.

Myths & Facts about ESDs

Myth: Electronic smoking devices (ESDs) are harmless! They only emit water vapor.

Fact: The aerosol emitted by ESDs is not water vapor. The aerosol contains many substances, including nicotine, ultrafine particles, volatile organic compounds and toxins known to cause cancer. There is enough peer-reviewed, published scientific evidence to determine that second-hand aerosol is not harmless. It's a new source of air pollution that should not be permitted in smokefree environments.

Myth: I quit smoking by using an ESD! Do you want to prevent people from quitting tobacco?

Fact: ESDs are not proven cessation devices. While some individuals have quit smoking tobacco by using ESDs, studies indicate that ESDs may not be helpful at the population level. Many people become "stable dual-users" who use both cigarettes and ESDs. Including ESDs in smokefree laws does not prohibit people from using these unregulated products, rather they simply must step outside to use them, just like people do to smoke cigarettes.

Myth: Nicotine is no more harmful than caffeine!

Fact: Not true! Nicotine is an addictive and very poisonous drug in even small amounts. Nicotine exposure can negatively impact developing fetuses as well as teenage brain development. Nicotine also reacts with other chemicals to create tobacco-specific carcinogens. The potential hazards to non-users in a shared air space are due to more than just nicotine.

Myth: I own a vape shop. I'm a small business owner that creates jobs and pays taxes in our community. If you included ESDs, I'll lose money and so will the city.

Fact: Thus far this has not been proven to be true. The tobacco industry has historically used "small business" arguments and threats, but smokefree laws have not been found to be damaging to business. If the shop is in a strip mall and shares the air with other businesses, these workplaces should not be exposed to unwanted secondhand aerosol.

What to Expect from the Opposition

Electronic smoking device (ESD) manufacturers and proponents seek to enable use of these products in otherwise smokefree spaces in order to maximize profits. They are actively engaged in efforts to prevent regulation of where the products can be used. This is especially true now that the big U.S. tobacco companies and their retailer networks are fully engaged in the ESD industry.

<u>Tobacco Company</u>	<u>Cigarette Brands</u>	<u>ESD Brands</u>
Altria	Marlboro, Virginia Slims	MarkTen
Reynolds American	Camel, Kool	Vuse
Lorillard	Newport	Blu

Communities should expect to hear from local ESD users ("vapers") and vape shop owners, but also from out-of-state opposition groups, such as Consumer Advocates for Smoke-free Alternatives Association (CASAA) and Vaping Militia. These groups have generated email blasts and Twitter bombing to City Councils from ESD supporters located around the U.S., who are not local constituents.

Opponents to including ESDs in smokefree laws have taken a page directly from the tobacco industry's play-book. They will claim that ESDs are harmless, that they contain only water vapor, that using them indoors is necessary to help people quit smoking, and other arguments that aim to create doubt and confusion.

For instance, Los Angeles radio stations aired ads by Blu, owned by Lorillard Tobacco Company, and Vuse, owned by Reynolds American, asking people to attend a City Council hearing to oppose a proposed ordinance to not allow ESD use in smokefree spaces. Thankfully, the City Council resisted the industry pressure and voted unanimously to include ESDs in the city's smokefree air law.



Tobacco vs ESD Ads. Source: <http://tobacco.stanford.edu>



www.no-smoke.org/ecigs.html
 510.841.3032

This publication was produced in partnership with the American Nonsmokers' Rights Foundation (ANRF), an educational nonprofit 501(c)(3) organization, which educates people about the benefits of smokefree air, and the right to breathe smokefree air. ANRF provides educational resources for schools, health departments, medical organizations, and others interested in the issues surrounding smoking and secondhand smoke and the benefits of smokefree environments.

Electronic Smoking Devices and Secondhand Aerosol

Electronic smoking devices (or ESDs), which are often called **e-cigarettes**, heat and vaporize a solution that typically contains nicotine. The devices are metal or plastic tubes that contain a cartridge filled with a liquid that is vaporized by a battery-powered heating element. The aerosol is inhaled by the user when they draw on the device, as they would a regular tobacco cigarette, and the user exhales the aerosol into the environment.

“If you are around somebody who is using e-cigarettes, you are breathing an aerosol of exhaled nicotine, ultra-fine particles, volatile organic compounds, and other toxins.” Dr. Stanton Glantz, Director for the Center for Tobacco Control Research and Education at the University of California, San Francisco.

Current Legislative Landscape

- As of October 1, 2014, [225 municipalities and three states include electronic smoking devices](#) as products that are prohibited from use in smokefree environments.

Constituents of Secondhand Aerosol

Electronic smoking devices (ESDs) do not just emit “harmless water vapor.” **Secondhand aerosol (incorrectly called vapor by the industry) from ESDs contains nicotine, ultrafine particles and low levels of toxins** that are known to cause cancer.

- ESD aerosol is made up of a high concentration of ultrafine particles, and the particle concentration is higher than in conventional tobacco cigarette smoke.¹
- Exposure to fine and ultrafine particles may exacerbate respiratory ailments like asthma, and constrict arteries which could trigger a heart attack.²
- At least 10 chemicals identified in ESD aerosol are on California’s Proposition 65 list of carcinogens and reproductive toxins, also known as the [Safe Drinking Water and Toxic Enforcement Act of 1986](#). The compounds that have already been identified in [mainstream](#) (MS) or [secondhand](#) (SS) ESD aerosol include: **Acetaldehyde (MS), Benzene (SS), Cadmium (MS), Formaldehyde (MS,SS), Isoprene (SS), Lead (MS), Nickel (MS), Nicotine (MS, SS), N-Nitrosornicotine (MS, SS), Toluene (MS, SS)**.^{3,4}
- **ESDs contain and emit propylene glycol**, a chemical that is used as a base in ESD solution and is one of the primary components in the aerosol emitted by ESDs.
 - Short term exposure causes eye, throat, and airway irritation.⁵
 - Long term inhalation exposure can result in children developing asthma.⁶
- Even though propylene glycol is FDA approved for use in some products, the inhalation of vaporized nicotine in propylene glycol is not. Some studies show that heating propylene glycol changes its chemical composition, producing small amounts of propylene oxide, a known carcinogen.⁷

- There are **metals in ESD aerosol, including chromium, nickel, and tin nanoparticles**.⁸
- FDA scientists found detectable levels of carcinogenic tobacco-specific nitrosamines in ESD aerosol.⁹
- People exposed to ESD aerosol absorb nicotine (measured as cotinine), with one study showing levels comparable to passive smokers.¹⁰
- **Diethylene Glycol**, a poisonous organic compound, was also detected in ESD aerosol.¹¹
- **Exhaled ESD aerosol contained propylene glycol, glycerol, flavorings, and nicotine, along with acetone, formaldehyde, acetaldehyde, propanal, diacetyl, and triacetyl**.¹²
- Many of the elements identified in the aerosol are known to **cause respiratory distress and disease**. The aerosol contained particles >1 µm comprised of tin, silver, iron, nickel, aluminum, and silicate and nanoparticles (<100 nm) of tin, chromium and nickel. The concentrations of nine of eleven elements in ESD aerosol were higher than or equal to the corresponding concentrations in conventional cigarette smoke.¹³
- ESDs cause exposure to different chemicals than found in conventional cigarettes and there is a need for risk evaluation for both primary and passive exposure to the aerosol in smokers and nonsmokers.¹⁴
- Short term use of ESD has been shown to increase respiratory resistance and impair lung function, which may result in difficulty breathing.¹⁵
- The first study to look at exposure to aerosol from ESDs in real-use conditions found that non-smokers who were exposed to conventional cigarette smoke and ESD aerosol absorbed similar levels of nicotine.¹⁶
- The “E-cigarettes do not produce a vapor (gas), but rather a dense visible aerosol of liquid sub-micron droplets consisting of glycols, nicotine, and other chemicals, some of which are carcinogenic (e.g., formaldehyde, metals like cadmium, lead, & nickel, and nitrosamines).” ASHRAE concluded that ESDs emit harmful chemicals into the air and need to be regulated in the same manner as tobacco smoking.¹⁷
- Some chemicals used as flavorings in ESD liquid, which are approved by the FDA for food use (ingestion), are not approved for inhalation and are associated with respiratory disease when inhaled.¹⁸
- There is a risk of thirdhand exposure to nicotine released from ESD aerosol that deposits on indoor surfaces.¹⁹
- Overall, ESDs are a new source of **Volatile Organic Compounds (VOCs) and ultrafine/fine particles in the indoor environment**, thus resulting in “passive vaping.”²⁰
- The World Health Organization (WHO) recommends that ESDs not be used indoors, especially in smokefree environments, in order to minimize the risk to bystanders of breathing in the aerosol emitted by the devices and to avoid undermining the enforcement of smokefree laws.²¹
- The American Industrial Hygiene Association (AIHA) also recommends that ESDs be included in smokefree laws: “**Because e-cigarettes are a potential source of pollutants (such as airborne nicotine, flavorings, and thermal degradation products), their use in the indoor**

environment should be restricted, consistent with current smoking bans, until and unless research documents that they will not significantly increase the risk of adverse health effects to room occupants.”²²

ESD aerosol is a new source of pollution and toxins being emitted into the environment. We do not know the long-term health effects of ESD use and although the industry marketing of the product implies that these products are harmless, the aerosol that ESD emit is not purely water vapor.

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U.S. State and Local Laws Regulating Use of Electronic Cigarettes *As of January 2, 2014*

The following list includes states and municipalities that have enacted laws regulating where electronic cigarette use (e-cigarettes) is prohibited. E-cigarettes are battery-powered devices that are designed to mimic cigarettes by vaporizing a nicotine-laced liquid that is inhaled by the user. The use of e-cigarettes in workplaces and public places is a significant public health concern, not only because of their unregulated constituents and the potential health impact of the vapor on users and bystanders, but also because e-cigarette use causes public confusion as to where smoking is allowed, resulting in compliance problems with smokefree laws.

Most local and state smokefree laws were enacted before e-cigarettes were on the market, so while such laws do not explicitly mention e-cigarettes, it should not be assumed that their use is permitted. Existing smokefree laws are often interpreted to prohibit e-cigarette use in their smokefree provisions.

NOTE: In the 100% Smokefree Venues column, the following abbreviations are used: W=non-hospitality workplaces; R=restaurants; B=bars; G=gambling facilities.

For more information, please visit [ANR's e-cigarettes page](#).

State Laws Regulating Use of E-cigarettes

State Laws Restricting E-cigarette Use in 100% Smokefree Venues

Other state laws that do not explicitly address e-cigarettes might be interpreted as prohibiting the use of e-cigarettes in existing smokefree provisions.

State	Use of E-cigarettes Prohibited	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	Permitted In:
1. North Dakota	Yes	WRBG	No	
2. New Jersey	Yes	WRB	No	
3. Utah	Yes	WRB	Yes	Retailers that sell e-cigarettes, until 7/1/17.

State Laws Regulating E-cigarette Use in Other Venues

State	Use of E-cigarettes Prohibited	Prohibited In:	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
1. Arkansas	Yes	Use of e-cigarettes prohibited on school district property.	No	
2. Colorado	Yes	Definition of tobacco product for purposes of prohibition of use on school property amended to include e-cigarettes, unless approved by FDA as cessation devices.	No	
3. Delaware	Yes	Tobacco use, including use of e-cigarettes and hookahs, prohibited in all State workplaces, including all buildings, facilities, indoor and outdoor spaces and surrounding grounds, as well as parking lots and state vehicles operated on State workplace property.	No	
4. Kansas	Yes	Tobacco use, including use of e-cigarettes, prohibited on all Dept. of Corrections property and grounds, by both employees and inmates. Per opinion of Attorney General, Indoor Clean Air Act of 2010 does not apply to e-cigarettes.	Partial	All places where smoking is prohibited per 3/12/10 law, including workplaces, restaurants, bars, gambling facilities, and public places generally.
5. Maryland	Yes	Smoking, including use of e-cigarettes prohibited on MARC commuter rail system trains.	No	
6. New Hampshire	Yes	Use of e-cigarettes prohibited in public educational facilities and on grounds thereof.	No	
7. Oklahoma	Yes	Tobacco use, including use of e-cigarettes, prohibited in all Dept. of Corrections facilities, including vehicles and grounds.	No	
8. Oregon	Yes	State agency employees prohibited from using tobacco products, including e-cigarettes, in State agency buildings and on State agency grounds adjacent to buildings.	No	

State	Use of E-cigarettes Prohibited	Prohibited In:	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
9. South Dakota	Yes	Tobacco use, including use of e-cigarettes, prohibited in Dept. of Corrections facilities and on grounds thereof, by both employees and inmates.	No	

Local Laws Regulating Use of E-cigarettes

Laws Restricting E-cigarette Use in 100% Smokefree Venues

Note: The jurisdiction(s) affected by county-level laws vary widely. Look for a plus symbol (+) next to each county with a law that includes both incorporated and unincorporated areas. A county without a symbol means that the county law covers unincorporated areas only.

State	Name	Use of E-cigarettes Prohibited	If Partial, Prohibited In:	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
1. AK	Palmer	Yes		WRB	No	
2. AL	Anniston	Yes		WRBG	No	
3. AL	Bessemer	Yes		WRG	No	
4. AL	Clay	Yes		WRBG	No	
5. AL	Creola	Yes		WRBG	No	
6. AL	Fultondale	Yes		WRBG	No	
7. AL	Midfield	Yes		WRBG	No	
8. AL	Monroeville	Yes		WRBG	No	
9. AL	Troy	Yes		WRBG	No	
10. AL	Vestavia Hills	Yes		WRBG	No	
11. CA	Arcata	Yes		WRB	No	
12. CA	Campbell	Yes		RBG	No	
13. CA	Eureka	Yes		WRBG	No	
14. CA	Fairfax	Yes		WRBG	No	

State	Name	Use of E-cigarettes Prohibited	If Partial, Prohibited In:	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
15. CA	Marin County	Partial	Use of e-cigarettes prohibited everywhere that smoking is prohibited, except in individual apartment units in multi-unit residences.	WRB	Partial	Individual apartment units in multi-unit residences.
16. CA	Mill Valley	Yes		WRB	No	
17. CA	Morgan Hill	Yes		WRB	No	
18. CA	Mountain View	Yes		WRB	No	
19. CA	Petaluma	Yes		W	No	
20. CA	Santa Clara County	Yes		WRB	No	
21. CA	Sebastopol	Yes		WRBG	No	
22. CA	Tiburon	Yes		WRB	No	
23. CA	Union City	Yes		WRB	No	
24. CA	Walnut Creek	Yes		RBG	No	
25. FL	Clay County	Yes		WR	No	
26. GA	Chatham County	Yes		WRBG	No	
27. GA	DeKalb County	Yes		W	No	
28. GA	Savannah	Yes		WRBG	No	
29. ID	Ketchum	Yes		WRBG	No	
30. IN	Indianapolis/Marion County+ (except the cities of Beech Grove, Lawrence, Southport, and Speedway)	Yes		WRB	No	
31. KY	Bardstown	Yes		WRBG	No	
32. KY	Glasgow	Yes		RBG	No	
33. KY	Kenton County+	Yes		W	No	
34. KY	Madison County+	Yes		WRBG	No	
35. KY	Manchester	Yes		WRBG	No	
36. LA	Monroe	Yes		WRBG	No	
37. LA	Ouachita Parish	Yes		WRBG	No	

State	Name	Use of E-cigarettes Prohibited	If Partial, Prohibited In:	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
38. LA	West Monroe	Yes		WRBG	No	
39. MA	Boston	Yes		WRB	No	
40. MA	Bourne	Yes		WRB	No	
41. MA	Buckland	Yes		WRBG	No	
42. MA	Burlington	Yes		WRBG	No	
43. MA	Foxborough	Yes		WRBG	No	
44. MA	Gill	Yes		WRBG	No	
45. MA	Grafton	Yes		WRBG	No	
46. MA	Great Barrington	Yes		WRBG	No	
47. MA	Hatfield	Partial	Use of e-cigarettes prohibited everywhere that smoking is prohibited, except for smoking bars and hotels/motels.	WRBG	Partial	Smoking bars and hotels/motels.
48. MA	Haverhill	Yes		WRBG	No	
49. MA	New Bedford	Yes		WRB	No	
50. MA	North Attleborough	Yes		WRBG	No	
51. MA	Northampton	Yes		WRB	No	
52. MA	Oxford	Yes		WRBG	No	
53. MA	Pittsfield	Yes		WRBG	No	
54. MA	Salem	Yes		WRBG	No	
55. MA	Saugus	Yes		WRBG	No	
56. MA	Shelburne	Yes		WRB	No	
57. MA	South Hadley	Yes		WRBG	No	
58. MA	Taunton	Yes		WRBG	No	
59. MA	Westminster	Yes		WRBG	No	
60. MA	Westport	Yes		WRBG	No	
61. MA	Westwood	Yes		WRBG	No	
62. MA	Whately	Yes		WRB	No	
63. MA	Winchester	Yes		WRBG	No	
64. MN	Duluth	Yes		WRBG	No	
65. MN	Ely	Yes		WRBG	No	
66. MN	Hermantown	Yes		WRB	No	

State	Name	Use of E-cigarettes Prohibited	If Partial, Prohibited In:	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
67.	MO	Creve Coeur	Yes		WRB	No
68.	MO	Jefferson City	Yes		WRBG	No
69.	MO	Washington	Yes		WRBG	No
70.	MS	Anguilla	Yes		WRBG	No
71.	MS	Arcola	Yes		WRBG	No
72.	MS	Baldwyn	Yes		WRBG	No
73.	MS	Bassfield	Yes		WRBG	No
74.	MS	Byram	Yes		WRBG	No
75.	MS	Calhoun City	Yes		WRBG	No
76.	MS	Centreville	Yes		WRBG	No
77.	MS	Coahoma County	Yes		WRB	No
78.	MS	Duncan	Yes		WRBG	No
79.	MS	Durant	Yes		WRBG	No
80.	MS	Flowood	Yes		WRG	No
81.	MS	Forest	Yes		WRBG	No
82.	MS	Georgetown	Yes		WRBG	No
83.	MS	Monticello	Yes		RBG	No
84.	MS	New Augusta	Yes		WRBG	No
85.	MS	Plantersville	Yes		WRBG	No
86.	MS	Prentiss	Yes		WRBG	No
87.	MS	Rolling Fork	Yes		WRBG	No
88.	MS	Sumner	Yes		WRBG	No
89.	MS	Wesson	Yes		WRBG	No
90.	ND	Bismarck	Yes		WRB	No
91.	ND	Walhalla	Yes		WRBG	No
92.	NY	Cattaraugus County	Yes		RBG	No
93.	NY	Suffolk County+	Yes		WRB	No
94.	SC	Estill	Yes		WRBG	No
95.	SC	Yemassee	Yes		WRB	No
96.	TX	Lufkin	Yes		WRBG	No
97.	TX	San Angelo	Yes		WRB	No
98.	WA	King County+	Yes		WRBG	No
99.	WV	Calhoun County+	Yes		WRBG	No

State	Name	Use of E-cigarettes Prohibited	If Partial, Prohibited In:	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
100. WV	Greenbrier County+	Yes		WRBG	No	
101. WV	Lewis County+	Yes		WRBG	No	
102. WV	Marshall County+	Yes		W	No	
103. WV	Pleasants County+	Yes		WRBG	No	
104. WV	Ritchie County+	Yes		WRBG	No	
105. WV	Roane County+	Yes		WRBG	No	
106. WV	Taylor County	Yes		WRBG	No	
107. WV	Wirt County+	Yes		WRBG	No	
108. WV	Wood County+	Yes		WRBG	No	

*Law pertains to both incorporated and unincorporated areas of county.

State Laws Restricting E-cigarette Use in 100% Smokefree Venues: 3

State Laws Restricting E-cigarette Use in Other Venues: 9

Local Laws Restricting E-cigarette Use in 100% Smokefree Venues: 108

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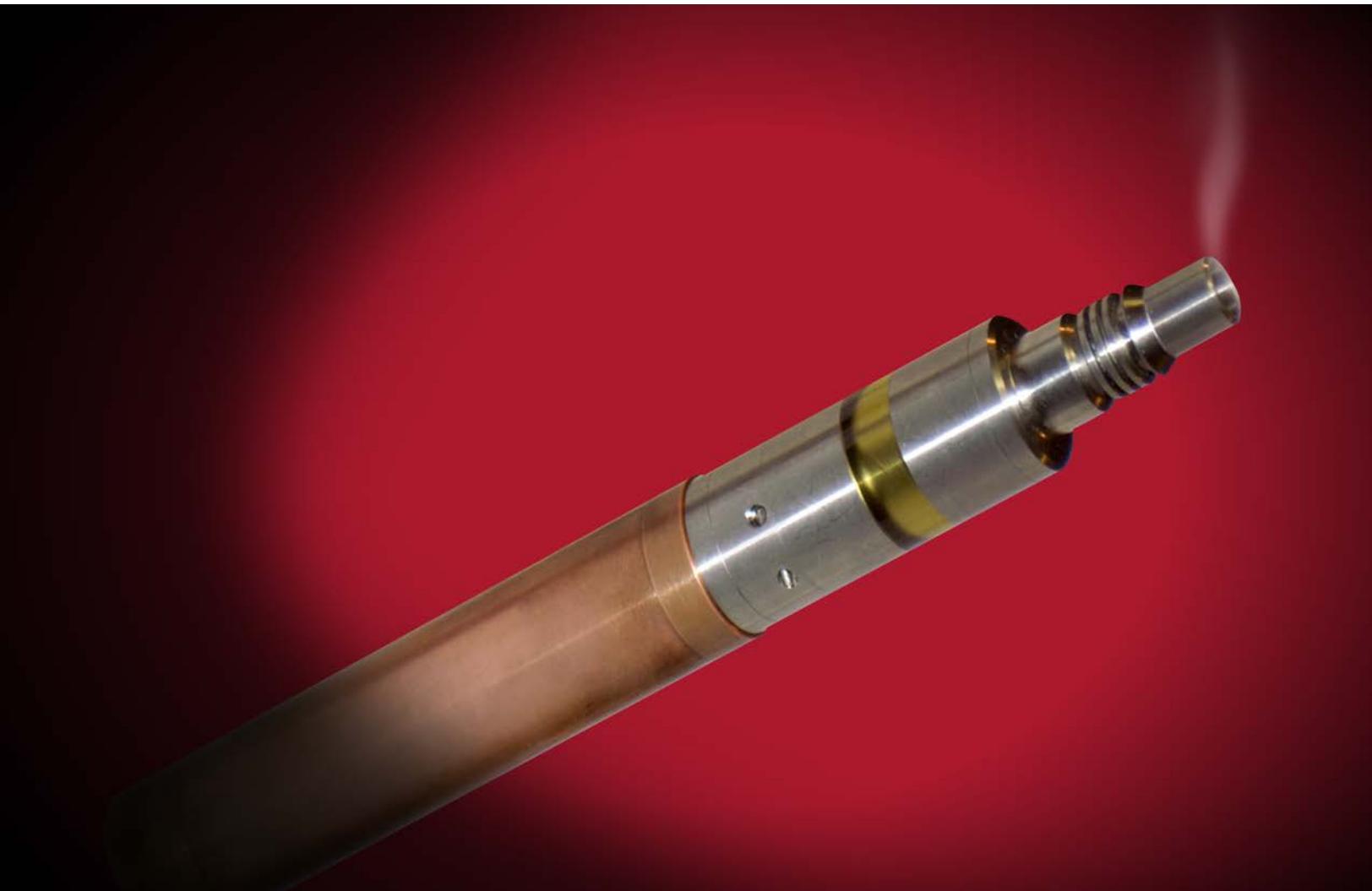
U.S. Fire Administration

Electronic Cigarette Fires and Explosions

October 2014



FEMA



U.S. Fire Administration

Mission Statement

We provide national leadership to foster a solid foundation for our fire and emergency services stakeholders in prevention, preparedness, and response.



FEMA



Electronic Cigarette Fires and Explosions

Key Points

- More than 2.5 million Americans are using electronic cigarettes (e-cigs or e-cigarettes), and this number is growing rapidly.
- Fires or explosions caused by e-cigarettes are rare.
- Twenty-five separate incidents of explosion and fire involving an e-cigarette were reported in the United States media between 2009 and August 2014.
- Nine injuries and no deaths were associated with these 25 incidents. Two of the injuries were serious burns.
- Most of the incidents occurred while the battery was charging.
- The shape and construction of e-cigarettes can make them more likely than other products with lithium-ion batteries to behave like “flaming rockets” when a battery fails.
- Lithium-ion batteries must be charged in accordance with the manufacturer’s instructions.
- Using power sources not approved by the manufacturer to recharge a lithium-ion battery can result in an explosion and fire.

What is an E-Cigarette?

The e-cigarette, also called a personal vaporizer (PV) or electronic nicotine delivery system, is a battery-powered device that simulates tobacco smoking by producing a heated vapor, which resembles smoke. These devices have become very popular as an alternative to smoking, including among a growing number of individuals who have never been smokers but who enjoy the many flavors and/or the experience of using e-cigarettes.

Development

E-cigarettes were first patented in 2003 and have been available for sale in the U.S. since 2007. E-cigs have been rapidly growing in popularity as the number and selection of products expand at an extremely rapid rate. Zhu, et al. (2014) report that by January 2014, there were 466 brands of e-cigarettes and 7,764 unique flavors available for sale. They also state that the number of products has been increasing at a rate of 10.5 brands and 242 new flavors per month. Richtel (2014) reported that annual e-cigarette sales have reached 2.5 billion dollars in the U.S. StatisticBrain¹ reports that as of July 13, 2014, there were 2.5 million e-cigarette smokers in America. Indicators point to continued dynamic growth in the industry.

What do they look like? How much do they cost?

E-cigarette designs vary greatly. Some resemble a traditional cigarette, cigar or pipe, while others resemble a

flashlight or a small pack of cigarettes with a protruding tube. Cellphone cases with built-in e-cigarettes are also available. Figure 1 shows three common commercially available devices.

Prices for the devices range from \$30 to over \$300, with a corresponding range in battery size, liquid capacity and vapor output. The most basic device is an e-cigarette, which looks like a traditional cigarette. Moving up the line, devices designed to make larger quantities of vapor are called PVs or Mods. Users can purchase a wide variety of commercially available products or make their own. Homemade vaporizers and e-liquids are common.



Figure 1. Three of the many e-cig styles available.

¹ <http://www.statisticbrain.com/electronic-cigarette-statistics>.

How do they work?

The devices have a heating element (an atomizer or caratomizer) to vaporize a liquid solution. Solutions (also called juice) usually contain a mixture of propylene glycol (PG), which increases flavor; vegetable glycerin (VG), which increases vapor; nicotine; and flavorings. Some juices provide flavored vapor without nicotine. Figure 2 shows the principal parts that are found in every e-cigarette or vaporizer.

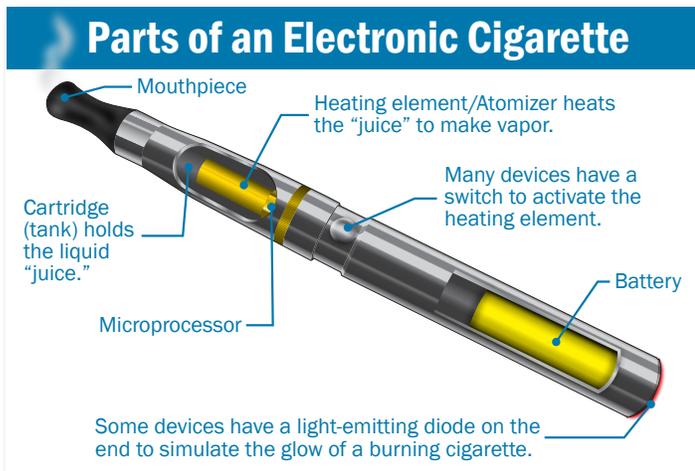


Figure 2. Parts of an electronic cigarette.

"Automatic" e-cigarettes activate the heating coil when a user takes a drag from the device. Manual e-cigarettes have a switch that the user depresses to energize the heating element to make the heated vapor. Most manufactured devices have built-in timeout features that prevent overheating, and many have locking features to prevent the switch from being activated in a pocket or purse. A light-emitting diode to simulate a cigarette's glow on the end is common among e-cigarettes, but not common in PVs or Mods.

Alternate Uses

E-cigarettes are sometimes used to smoke hash oil or "honey oil," a cannabis product derived by separating the resins from marijuana. Separating hash oil from marijuana is a hazardous process that is often done illegally in hotels and homes. First responders should be aware of this practice and the hazards that it presents.²

² For more information, see <http://www.rmhidta.org/default.aspx/MenuItemID/691/MenuGroup/RMHIDTAHome.htm>.

Health and Safety

The health effects of the vapor and the danger of nicotine overdose by ingestion or dermal contact with the juice are the subject of ongoing review by various agencies (Cressey, 2014; World Health Organization (WHO), 2014). The regulatory situation related to e-cigarettes varies by jurisdiction. At the time of publication of this report, the following facts were known:

- The U.S. Food and Drug Administration (FDA) recently proposed regulations for e-cigarettes. These proposed FDA regulations do not include consideration of the battery or electronics used in/with the devices — the FDA is proposing to address only the health effects of inhaling the vapors (FDA, 2014; Ledford, 2014).
- WHO has recently proposed that member states adopt stringent controls on e-cigarettes (WHO, 2014). The proposal is limited to the potential health effects of e-cigarettes and does not include language addressing the electronics.
- The U.S. Consumer Product Safety Commission has advised that e-cigarettes do not fall under its jurisdiction.
- Gourdet, et al. (2014) report that 34 states' laws address e-cigarettes either explicitly or as part of language applying to tobacco-derived or nicotine-containing products. Laws explicitly addressing e-cigarettes primarily focus on youth access (22 states) or smoke-free air (12 states).
- Underwriters Laboratories (UL) has developed standards that relate to lithium-ion battery safety. These standards are applied to products containing batteries that undergo UL safety testing.
- No regulation, code or law applies to the safety of the electronics or batteries in e-cigarettes. While many consumer products are required to be tested by a nationally recognized test laboratory, such as UL, there are no requirements that e-cigarettes be subjected to product safety testing.

Do You Mind If I Vape?

The world of cigarette alternatives has a vocabulary of its own.

The term **vape** is a contracted form of the word **vapor**, which has its origins in the Latin “vaporem” meaning “steam” or “exhalation.” The word vape mirrors the path of word formation that the term **smoking** followed; for instance, there are **nonvapers** as well as **vapers**, and those who oppose the habit talk about **antivaping** campaigns.

Vaporize is what the e-cigarette does. **Vapor** is what the e-cigarette produces. **Vaping** is what users do. **No-nic vapers** are vapers who vape using juice that does not contain nicotine.

Other common terms used within the vaping community include **analog** (slang for a traditional cigarette), **juice**, **e-juice**, **e-liquid**, **tanks**, **atomizers**, **cartomizers**, **clearomizers**, **drippers**, **vape pens**, **twists**, **Mods**, **subohm coils**, **mechanical Mod**, **PG**, **VG**, and **blast**.

Incidents

Why did we look at e-cigarettes?

A number of recent fires have been attributed to e-cigarettes, causing some concern within the fire service community. In response, a review of incidents involving e-cigarettes was initiated.

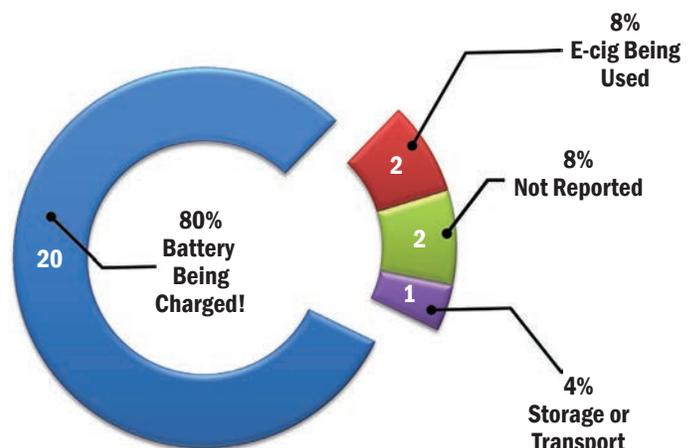
The National Fire Incident Reporting System (NFIRS) does not collect information that is specific enough to provide accurate analysis of the frequency or impact of e-cigarette fires. Lacking NFIRS data to use, media reports were selected as an available, albeit less reliable, information source. The results cited herein should be viewed in this light — as qualitative information rather than as a quantitative analysis.

What we found

Media reports of 25 separate incidents in the U.S. dating from 2009 to the present were found during an Internet search. This list is not thought to be all-inclusive since it is likely that there were incidents that were not reported to the fire department and/or reported in the media. The media reports were reviewed, and key information was extracted and summarized. The information contained in many reports was brief and often inconsistent with other media reports covering the same incident. The photographs or video segments included in some of the reports provided more useful information for this study than the body of the article. A summary spreadsheet of the reports was prepared and is included in Appendix 1 for reference.

- Twenty incidents occurred while the battery in the device was being charged.
- Two incidents occurred during use.
- In two incidents, it is not clear whether the e-cigarette was in use, idle or being charged.
- One incident occurred during transportation on a cargo aircraft.
- Ten injuries and zero deaths were reported by the media.³
- Several burn injuries were reported. Two serious injuries occurred when devices exploded in users' mouths.

Status of E-cigarette at Time of Fire



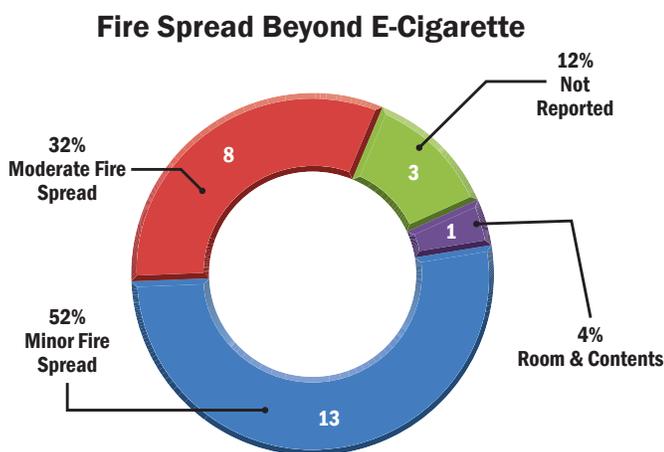
³ Press in the United Kingdom has reported one death in an August 2014 incident where an e-cigarette that was being charged in a nonmanufacturer-approved device exploded and ignited nearby oxygen equipment.

Media reports generally characterize these incidents as explosions. The event occurs suddenly and is accompanied by a loud noise, a flash of light, smoke, flames, and often vigorous ejection of the battery and other parts. Many of the media reports state that the battery or other components of the device were ejected under pressure and “flew across the room,” often igniting combustible items where they landed. An incident that reportedly occurred in a U.K. pub was captured on a security camera and subsequently posted on YouTube.⁴

Did the fires spread?

Most of the incidents resulted in ignition of nearby contents, such as carpets, drapes, bedding, couches or vehicle seats. Fortunately, users were generally nearby when the incident occurred (most were alerted by the sound of the explosion), and they were able to take action to extinguish the fires while they were still small. One incident resulted in the loss of a bedroom.

In the chart below and in the listing in Appendix 1, the term “minor fire spread” describes incidents where scorching or flames either self-extinguished or were extinguished by occupants very quickly; typically, the burned areas appeared to be less than 6 inches in diameter. The term “moderate fire spread” is used to describe those incidents where the flames grew larger but were extinguished by occupants before fire department arrival.



Charging

Eighty percent of the incidents reported occurred while charging. A variety of charging sources were reported — laptop USB ports, auto USB adapters, desktop computer USB ports, and wall adapter USB ports.

⁴ See <https://www.youtube.com/watch?v=mXgFk7RMjL4>.

None of the incidents reported in the media involved the larger PVs. All of the incidents reviewed involved “vape pens” or “twists,” which more closely resemble traditional cigarettes in appearance. These twists are intended to be recharged using a USB port built into the e-cigarette and a power adapter supplied with the device. Most of the PVs and Mods use larger batteries that are removed from the vaporizer and placed in an external charging unit. This helps to ensure that a proper power supply is used to charge the batteries.

USB Ports

Many e-cigarettes have a USB port for connecting the device to the power adapter that is provided by the manufacturer of the e-cigarette. The use of ordinary USB port charging connections allows users to connect the e-cigarette to power adapters that are not provided by the manufacturer of the device. The use of such non-approved power adapters appears to be responsible for most of the incidents involving e-cigarettes.

Few, if any, consumers understand that not all USB ports are “created equal.” The voltage and current provided by USB ports can vary significantly. Appendix 2 shows the current specifications for the various **standard** USB port definitions. (There are also nonstandard ports in use that do not match these specifications.) Without consulting the technical specifications for the USB power source, it is difficult or impossible for a consumer to determine the power supplied by any particular USB port and even more difficult to determine whether it is safe to use with a particular e-cigarette.

As a result, plugging an e-cigarette into a USB port or power adapter not supplied by the manufacturer may subject the battery to higher current than is safe, leading to thermal runaway that results in an explosion and/or fire.

ALWAYS USE THE CHARGING APPLIANCE THAT COMES WITH THE UNIT AND FOLLOW THE MANUFACTURER'S INSTRUCTIONS.

PLUGGING AN E-CIGARETTE INTO A “STANDARD” USB PORT TO RECHARGE MAY RESULT IN AN EXPLOSION AND/OR FIRE.

Overheating

Although we saw no evidence that this can be a problem, concern has been raised that the heating element inside the e-cigarette could become an ignition source. Manufactured PVs typically have built-in circuits to limit the time that the heating element can be turned on, which prevents overheating and possible fires or injuries. In the absence of independent safety testing of the e-cigarettes, no assurance that these circuits will reliably perform their safety function is available. Homemade Mods may not have overheat protection built in.

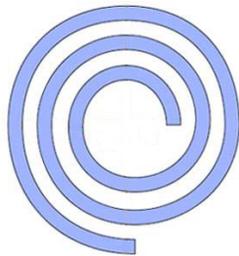
Lithium-Ion Battery Failure

Lithium-ion polymer batteries are excellent power supplies for portable devices and are widely used by consumers, industries and the emergency services. Lithium-ion batteries are known to experience statistically rare failure events, including fire and explosions. Indeed, there are multiple reports of fires caused by failures of lithium-ion batteries in cellphones, laptop computers, medical devices, electric cars, and myriad other portable electronic devices.

The descriptions and photographs in the media reports reviewed are entirely consistent with known failure modes of lithium-ion batteries.

Why do Lithium-ion batteries catch fire?

A cylindrical lithium-ion battery is made by winding alternating layers of metallic anode and cathode material separated by a porous film. The porous separator film holds a liquid electrolyte made of an organic solvent and dissolved lithium salts. This core is placed into a cylindrical metal can through the open end, and the can is then sealed closed tightly so that the liquid electrolyte cannot escape or evaporate.



All of the electrolytes currently used in lithium-ion batteries are either flammable or combustible liquids. It is this flammable electrolyte that causes the fire and explosion when the lithium-ion battery overheats.⁵ Scientists are working to develop nonflammable electrolytes

⁵ A variety of organic solvents are used, either alone or in combinations. The boiling points of the electrolytes range from 200 F to 500 F, and autoignition temperatures range from 60 F to 300 F.

for lithium-ion batteries, but these are not yet available in the market.

During the typical failure mode for a lithium-ion battery, the electrolyte is heated to its boiling point,⁶ the internal pressure in the battery builds to a point where the seal at the end of the battery ruptures, and the pressure is abruptly released through the sealed end of the battery case. Usually, the electrolyte then ignites, and expanding gas from the rapid combustion will further increase the pressure. The fire is sustained briefly after initial ignition by the porous separator film, which is made of plastic. Mikolajczak, et al. (2011) provide detailed descriptions and explanations of the various failure modes that lithium-ion batteries can experience.

Why is the impact of battery failure different in e-cigarettes?

E-cigarettes are different from other electronic consumer devices because the battery is installed in a cylindrical device that has its weakest (structural) point at the ends. When the battery seal (at the end of the battery) ruptures, the pressure within the e-cigarette cylinder builds quickly and instantly ruptures, usually at the end. As a result of the battery and container failure, one or the other, or both, can be propelled across the room like a bullet or small rocket.

In contrast to e-cigarettes, the cylindrical lithium-ion batteries used in laptop computers and portable tools are contained in rigid plastic cases that are generally strong enough to prevent the failing battery from “rocketing” away. Fires do occur as a result of battery failure, but most fires initially involve only the device that the battery pack is installed in.⁷

Cellphones, tablets and other devices use pouch-type batteries that are flat rather than cylindrical in shape, and they are encased in a sealed flexible plastic pouch or thin rigid plastic case instead of a metal can.



⁶ Overheating of the battery (thermal runaway) can be caused by puncture, overcharge, external heat, short circuit or internal cell fault.

⁷ A laboratory experiment showing worst-case lithium-ion battery failures in a laptop computer can be seen at <https://www.youtube.com/watch?v=pizFsY0yjs#t=250>.



These pouch-type batteries will not build up much pressure when they overheat and do not explode violently when they fail. But pouch batteries can, and have, overheated to the point where the pouch bursts, the electrolyte ignites, and a fire spreads beyond the device.⁸

What safeguards are used to prevent fires in Lithium-ion batteries?

Several different approaches to protecting lithium-ion batteries against explosion or fire have been developed. Protection can be built into the battery, the charging appliance, or the electronics that control the charging cycle. Often, a combination of these approaches is used in a product. Amon, et al. (2012) conclude that the risk of fire depends heavily on the type and effectiveness of the protection system used.

The protection appropriate for a particular device or appliance is determined by the manufacturer and/or by regulations or standards that apply to that product. Since there are no apparent standards directly applicable to e-cigarettes, the selection of protection for the lithium-ion battery is left to the manufacturers' best judgment. The fact that, statistically, so few of these devices are failing in the ways described by the media reports suggests strongly that e-cigarette manufacturers have been largely successful in preventing battery fires.

Conclusions

E-cigarettes are increasingly common; sales are growing rapidly.

The lithium-ion batteries used to power the devices can fail. Battery failures, manifested as small explosions and fires, have occurred. Considering the vast number of products in the field that use lithium-ion batteries, however, it is clear that the failure rates are low.

⁸ Failure of an intentionally overloaded pouch-type lithium-ion battery can be seen at https://www.youtube.com/watch?v=SMY2_qNO2Y0&index=8&list=PLkLKD6x5giq2LyjhKbjt-OYR8kiAN8_UW.

It is reasonable to expect that the number of battery failure incidents will increase as the number of lithium-ion batteries in use continues to grow, even as the failure rate per device remains constant or declines. Continuing improvements in battery safety designs by the industry could offset this expected increase.

Not all battery failures can be prevented by end-users. However, the media reports strongly suggest that many of the failures occurred while the battery was charging with power supplies that were not provided by the manufacturer. This fact highlights a need for user education.

E-cigarette manufacturers should consider changing to a different style of electrical connection. The elimination of USB-type electrical connections on e-cigarettes will make it more difficult (but not impossible) for users to overcharge the batteries. The inclusion of protection circuits into the e-cigarette device would improve battery safety.

Suppliers, industry associations, user groups, and fire prevention educators should all stress the importance of proper charging practices to reduce the number of incidents. Most e-cigarette manufacturers already mention the importance of proper charging practices in their literature. Stronger warnings in the literature and user manuals may be helpful.

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Appendix 1

E-Cigarette Incidents Reported in News Media*

Date	Location	Charging?	Charging Source	Fire Beyond E-Cig?	Injuries?	Notes	Source URL
Aug-09	Minneapolis, MN	NO	NA	Moderate	None	Fire in a cargo container on a FedEx jet discovered during approach to landing. Fire suppression system activated. Fire was linked to Li-ion batteries in box of Ruyan Inhalers, model RappE-Mystick.	
Nov-11	Greeley, CO	NO	NA	No	Severe	A man was hospitalized for eight days after an electronic cigarette exploded in his face, sending burning debris and battery acid into his mouth, face, and eyes. Prodigy V3.1 e-cig cited, as well as Radio Shack Enercell battery.	https://www.consumeraffairs.com/news04/2012/04/e-cigarette-exploded-in-mans-face-suit-charges.html
Feb-12	Niceville, FL	NO	NA	No	Severe	E-cigarette explodes in mouth causing severe burns, lost teeth and part of tongue. Lots of press coverage on this one. Some stories report that the device may have been modified by the user.	http://www.cbsnews.com/news/electronic-cigarette-explodes-in-mans-mouth-causes-serious-injuries/
Apr-13	Glendale, AZ	Y	USB-Car	Moderate	None	Exploded while charging from USB adaptor in car. Hot fragments ignited back seat upholstery.	http://www.kpho.com/story/22066822/unattended-electronic-cigarette-charger-explodes-car-catches-fire
Apr-13	Oklahoma City, OK	Not Reported	Not Reported	Moderate	Minor	Explosion of Li-ion battery in e-cig in office. Occupant treated for inhalation.	http://www.koco.com/news/oklahomanews/okc/Police-Explosion-at-apartment-complex-came-from-e-cigarette/19768650#!T8hDI
Jun-13	Sherman, TX	Y	USB-Macbook	No	Moderate	Battery into 2-hour charge exploded in user's hand. 2nd & 3rd degree burns on hand and smoke inhalation.	http://www.kxii.com/news/headlines/E-cigarette-explodes-in-Texoma-mans-home-215771641.html
Jul-13	Corona, CA	Y	USB-car	Minor	Moderate	Charging in car led to 'blowtorch' fire and explosion. Debris flew into occupant's lap, resulting in 2nd degree burns on upper thighs and lower buttocks. VapCig brand is cited.	http://losangeles.cbslocal.com/2013/07/11/corona-couple-sues-after-e-cigarette-battery-explodes-in-car/
Jul-13	Tulsa, OK	Y	USB-Laptop	Minor		Fire while charging off laptop.	http://www.newson6.com/story/22536957/tulsa-mans-e-cig-catches-fire-while-charging

* This listing is confined to incidents reported in the US. Internet search reveals many incidents in UK and other countries.

Date	Location	Charging?	Charging Source	Fire Beyond E-Cig?	Injuries?	Notes	Source URL
Aug-13	Phoenix, AZ	Y	USB-Macbook	Minor	None	This one ignited carpet, was put out by resident. Video shows plugging into white laptop for charge.	http://www.azfamily.com/news/consumer/Exploding-electronic-cigarette-blamed-for-fire-231499581.html
Aug-13	Phoenix, AZ	Y	Not Reported	Major	Minor	Resident states in article that e-cig started TWO fires in their bedroom in recent days. They just exploded... Charging for about 20 minutes. First incident scorched carpet, second gutted the bedroom. Resident treated for smoke inhalation. Smokin' T Smokin Time brand is cited.	http://www.kptv.com/story/23785774/phoenix-fd http://www.kpho.com/story/23273275/e-cigarette-nearly-sparks-fire-at-phoenix-apartment
Sep-13	Birmingham, AL	Y	Not Reported	Moderate	None	Fire in home caused by charging e-cig.	http://www.wbng.com/news/local/Fire-Marshall-Charging-electronic-cigarette-sparked-fire-222081441.html
Sep-13	Grant Park, GA	Y	USB-Desktop	Moderate	None	Unattended charging via USB port on computer. Spread to couch and rug.	http://www.wsbtv.com/news/news/local/woman-says-e-cigarette-exploded-shot-flames-4-feet/nZkCX/
Sep-13	Provo, UT	Y	USB-Car	Moderate	Moderate	Explosion while charging in car. Hot fragments ignited baby's car seat in back seat resulting in 1st and 2nd degree burns to 3 yr old.	http://newsone.com/2724915/e-cigarette-fire-utah-kinzie-barlow/
Oct-13	LaCrosse, WI	Y	Wall	Minor		Story highlights several incidents during charging. Lack of overcurrent/overheat circuitry implicated.	http://www.dailymail.co.uk/news/article-2442715/E-cigarette-explosion-causes-Wisconsin-home.html
Oct-13	Valparaiso, FL	Y	USB-Wall adaptor	Moderate	None	Explosion while charging from USB port, igniting curtains. Occurred after 10 minutes charging.	http://www.nwfdailynews.com/local/electronic-cigarette-explodes-catches-curtains-on-fire-1.214335
Oct-13	Blaine, MN	Y	USB-Desktop	Minor	None	Exploded while charging on USB plugged into computer.	http://www.myfoxtwincities.com/story/23584719/minnesota-e-cig-explosion-charging#ixzz2gh7xFIF
Nov-13	Kootenay County, ID	Y	USB-Laptop	Moderate	None	Explosion while charging from USB port of laptop. Ignited couch. Smoke alarm alerted the sleeping family of four.	http://www.wptv.com/news/local-news/water-cooler/e-cigarette-blamed-for-house-fire-in-idaho-electronic-cigarette-battery-overcharged-and-exploded http://www.nwcn.com/news/230720191.html

Date	Location	Charging?	Charging Source	Fire Beyond E-Cig?	Injuries?	Notes	Source URL
Nov-13	Warren, MI	Y	Wall	Minor	None	Device blew out of wall socket in ball of fire. Scorched hardwood flooring before occupant extinguished it. TV video report shows a USB wall charger that does not match those supplied by the manufacturer (Bulldog).	http://www.wxyz.com/news/warren-woman-says-electronic-cigarette-caused-small-explosion-and-fire
Nov-13	Eugene, OR	Y	Auto	Moderate	None	Device failed after about 2 hours charging. Fragments flew to back seat, igniting seat of truck.	http://www.kval.com/news/local/E-cig-explodes-damaging-truck-231482791.html?tab=video&c=y
Nov-13	Colorado Springs, CO	Y	Not Reported	Moderate	Moderate	Unattended while charging on floor. Ignited bed. Home occupant burned arms, hands & face while using blanket to smother flames.	http://www.krdo.com/news/ecigarette-blamed-for-mattress-fire/23206306
Dec-13	Springfield, MO	Y	USB-Laptop	Moderate	Moderate	Failure while charging on laptop USB port. Ignited bedding, 2nd degree burns on leg and foot. User quoted as saying he likely used the wrong charger.	http://www.ky3.com/news/local/man-experiences-explosive-consequence-from-using-electronic-cigarette/21048998_24083270
Mar-14	Medford, OR	Y	Not Reported	Minor	None	Exploded while being charged, sending bits of burning battery flying into the ceiling and walls. One hot piece of battery landed on a pillow, causing it to smolder and filling the house with smoke.	http://www.katu.com/news/local/Fire-marshall-E-cigarette-batteries-cause-fires-in-Medford-248274331.html
Mar-14	Medford, OR	Y	Not Reported	Minor	None	The lithium batteries that power the vaporizers in electronic cigarettes caused two recent fires in Medford. In this second case, a mattress caught fire but a resident put it out.	http://www.katu.com/news/local/Fire-marshall-E-cigarette-batteries-cause-fires-in-Medford-248274331.html
Mar-14	Lompac, CA	Y	Wall	Moderate	None	Started kitchen fire while charging unattended.	http://www.ksby.com/news/e-cigarette-blamed-for-kitchen-fire/
Mar-14	Syracuse, NY	Not Reported	Not Reported	Moderate	Moderate	Patient on oxygen in a hospital suffered 1st and 2nd degree burns. Patient had e-cig, but investigation has not yet tied e-cig to the ignition. Hospital has banned e-cigs out of caution.	http://www.foxnews.com/us/2014/04/22/ny-hospital-reinforces-ban-after-e-cigarette-fire/

Appendix 2

USB Variations

The following information and tables were extracted from Wikipedia.*

Universal Serial Bus (USB) is an electronics industry standard developed in the mid-1990s that defines the cables, connectors and communications protocols used in a bus for connection, communication, and power supply between computers and electronic devices.

USB was designed to standardize the connection of computer peripherals (including keyboards, pointing devices, digital cameras, printers, portable media players, disk drives and network adapters) to personal computers, both to communicate and to supply electric power. It has become commonplace on other devices, such as smartphones, PDAs and video game consoles. USB has effectively replaced a variety of earlier interfaces, such as serial and parallel ports, as well as separate power chargers for portable devices.

In general, there are four basic kinds or sizes related to the USB connectors and types of established connections:

- The older “standard” size, in its USB 1.1/2.0 and USB 3.0 variants (for example, on USB flash drives),
- The “mini” size (primarily for the B connector end, such as on many cameras),
- The “micro” size, in its USB 1.1/2.0 and USB 3.0 variants (for example, on most modern cellphones), and
- The versatile “USB On-The-Go” scheme, in both mini and micro sizes.

In general, each end of a USB cable uses a different kind of connector; an A-type or a B-type. This kind of design was chosen to prevent electrical overloads and damaged equipment, as only the A-type socket provides power.

USB connections also come in four data transfer speeds: Low Speed, Full Speed, High Speed and SuperSpeed. High Speed is only supported by specifically designed USB 2.0 High Speed interfaces (that is, USB 2.0 controllers without the High Speed designation do not support it), as well as by USB 3.0 interfaces. SuperSpeed is supported only by USB 3.0 interfaces.

* USB, (n.d.). In Wikipedia. Retrieved August 13, 2014, from http://en.wikipedia.org/wiki/Universal_Serial_Bus

The tables that follow illustrate the differences among several principal characteristics of USB ports and connecting cables. While the majority of device manufacturers adhere to the industry standards, it is important to note that this is a rapidly changing field and that there are a number of non-standard ports and connectors in the marketplace, which further illustrates the need to follow the manufacturers’ guidance when charging a device.

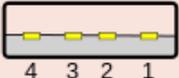
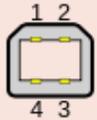
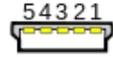
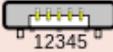
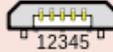
Power Output*

USB Power Standards			
Specification	Current	Voltage	Power
USB 1.0	150 mA	5 V	0.75 W
USB 2.0	500 mA	5 V	2.5 W
USB 3.0	900 mA	5 V	4.5 W
USB 3.1	2 A	5 V	10 W
	5 A	12 V	60 W
	5 A	20 V	100 W
USB Battery Charging	0.5–1.5 A	5 V	2.5–7.5 W
USB Power Delivery	2 A	5 V	10 W
	3 A	12 V	36 W
	3 A	20 V	60 W
	5 A	20 V	100 W

Color Coding*

Color	Description
Black or white	USB 1.x or USB 2.0
Blue	USB 3.0
Yellow or red (ports only)	High current and/or sleep-and-charge

USB Connector/Plug Configurations*

Standard USB Plug/Connector Designs	
 <p>Type A</p>	 <p>Type B</p>
 <p>Mini-A</p>	 <p>Mini-B</p>
 <p>Micro-A</p>	 <p>Micro-B</p>
 <p>Micro-B USB 3.0</p>	