

# LESSONS LEARNED

## Hydrochloric Acid Spill

A graduate student researcher, working after hours, was moving a new 4-L bottle of Concentrated Hydrochloric Acid from the fume hood cabinet to the fume hood. The bottle slipped from their grasp and shattered, spreading acid and broken glass across the floor.

### I ZSf ZSbbWVW1

3 YcSvGsfWefgVWf dVWsdZVdi ad[] Y SxVd` ad\_ S^ Tge[] Vae Zagdbi Se\_ ah[] Y S` W >[fVdTaffWax 5a` UW fcsfW : kvchUZ` adU3UUV Xa\_ fZWg\_ WZaaV UST[] W fa fZWg\_ WZaaVzFZWtaffWefbbVW Xa\_ fZWd YcSb S` V ezSfVdVf ebdVSV[] Y SU[V S` V Tca]W Y See SUb ee fZWaa ad3e fZWtaffW SeXS` Y fZWYdSV efgVW f fdW fa USfUZ [fi USge[] Y fZWtca]W Y See fa Ugf Z[eY` ahW S` V X` YVd S` V S` ai [] Y fZWSUV [] fa Z[eY` ahWfZWV` ahW i SedV\_ ahW [] \_ W[SfWk S` V fZWV` YVd[] eW fZadgYZ k` &adg: SFWkI bcbVdigeWaxS` ST LaSf S` V YaYY VebdVWV fW S` k XgdZVdVS\_ SYWfa e[] adUafZVez FZWST i Secg[U] k WshUgSfW SeSbdVSGfja` žI Z[WFZW YcSV efgVW fi Sed[] e[] Y fZWdZS` VtS` afVd`ST \_ W\_ Tvd US`WV fZWdBc[] U[bS` hWef[YSfad S` V 7: E h[S G` [hVefk Ba [UW6]ebSfUZ ž >SfVdfZSf` [YZfi fZWST adcfack V[dWf k TWai fZWSdV aXfZWeb[`VybVdW UW S\_ kefVdage kV`ai [cg]V dqb[] Y Xa\_ fZWdUWV[] Y ž FZ[e dVg fW [ SVV[f]a` S`ZSI SdVage\_ Sfv[S`eUWV` gb \_ VSegdV[] fZSf` ST ž

### I ZSfi WfdYZf,

- ∇ DVWsdZVdi Sei Vsd[] Y bcbVdBB7Vgd[] Y fZWf\_ WaX fZW[] U[VW f
- ∇ DVWsdZVdV\_ ahW La` fS\_ [] SFW BB7 S` V d[] eW fZWd X` YVd[] \_ W[SfWk
- ∇ DVWsdZVdVhSUGSfW S` V eWgdW fZWST SeS bDWSGfja`
- ∇ DVWsdZVdLa` fSUW 7: E h[S GGB6t S` V fZWSTieB: [] \_ W[SfWk
- ∇ DVWsdZVdi Se` afi ad[] Y Sa` W

### >Vea` e>Vsd W,

FZ[e[] U[VWfW\_ bZSe[] VebcbVdZS` V[] Y aXZSI SdVage \_ Sfv[S`eSei W`SebcbVdLa\_ \_ g[] [USf]a` T VV WV` STez I Z[WFZW\_ W\_ TWaeXfZWST bVad\_ W SV\_ [cST k[] fZWd dVba` eWfa fZ[e[] U[VWfi fZVW[] U[VW feUS` TWbdVWVW S` V dVba` eWfa fZW\_ [] bcbVWz FZWa` ai [] Y Vea` e Vsd W i VdVWVf[XW Tk` ST bVea` ` WS` V 7: E,

- ∇ BcbVdLa` fS[] VdZS` V[] Y, ge[] Y fi a ZS` Veb`SU[] Y a` WZS` Vg` VVd VsfZ fZWtaffWV` V a` Wa` fZW WU[] aX fZWtaff`MadLa` fS[] Vdi Z[`V[X] Y adUSck[] Y i [^ZVb bD`WVfVcb[] Y fZVLa` fS[] Vd
- ∇ EVLa` VSk 5a` fS[] \_ Wf, B`SU[] Y fZWtaff`MadLa` fS[] Vd [] fa SeVLa` VSk fgT adLa` fS[] VdfZSf [eVSe]Vd fa USck i Z[`VfS` ebad[] Y US` lagV ZShVbdVWV fW fZW [] U[VWf S`faYVZVz
- ∇ DVef fZW\_ bg`eWdVGS[] Xa\_ fck[] Y fa USfUZ S VS` YVdageXS` Y aTUVfZ A` UMS` aTUVf eSdafa XS` fZWtVef lagdVaxSUFja` [efa YVW agf aXfZW Sk Se cg[U] k Sebae[]T`W` `VWVdfk fa USfUZ [fz
- ∇ 5a\_ \_ g[] [USf]a` , @af[X] aUgbs` feaXebSUV` fZSf SdV SV`SUV f S` V a` `ai VdXaad [XfZVdV]eSeb[`aX ZSI SdVageUZW\_ [US`ez FZV\_ Sk` afTW\_ bSUFV Tgf `af[X] Y fZW\_ i [^ZVb fZW\_ ]` ai fa La` fSUF ea\_ Vd` W[XfZV V a` af[UWaa\_ WZ[] Yz
- ∇ Eb[`= [feS` V FcS[] [ Y, 7hVd` ST a` US\_ bge [e dVg dW fa ZShVeb[`] [f a` ZS` V SbbcbqSfVad fZWUZW\_ [US`e geW [] fZWSdV Bv`ea` ` W\_ gef TWfcs[] W a` fZW bcbVdigeVaxfZWeb[`] [fz : Sh] Y Seb[`] [f a` ZS` V S` ai eXadcg[U] VdS` V TWVdLa` fcb`aXeb[`W\_ Sfv[S`e S` V VVdVSeV` fZVbafW f[S`a dVShWfa SV`SUV f SdVSez
- ∇ BcbVde facyWI Z[`W af SV[dVf [] bSUF[] fZ[e [] U[VWf [f VaVW\_ bZSe[] WfZW\_ badS` UMaXcbVd efacSYWaxUZW\_ [US`ez ;` Seb[`WVWf egUZ Se fZ[e [] bcbVdVd efacWUZW\_ [US`e lagV ZShW[] U[VSeW fZW eVWdfk aXfZW[] U[VWf Tk dVBUf[] Y i [fz fZWeb[`W \_ Sfv[S`e
- ∇ EfacSYWaxUSf]a` , 5a` e[VVdVSeVaxdV\_ ahS` S` V ZS` V[] Y i ZWUZaae[] Y efacSYWsdVSeXad [cg]VUZW\_ [US`e/Sha[V efacSYW] `ai SdVSeadST ahVWVW` VVWfi
- ∇ ? [ [] Sf]a` , BgdZSeWUZW\_ [US`e[] fZVW\_ S`Wef cgS` fff[Vebae[]T`W` FZ[e] SeS Xg` & fVdTaffWaxSUVi fZW WVVW S\_ ag` fi SeeY` [XUS` f k` VefZS` & fVdž 3e\_ S`VdLa` fS[] Vdi agV ZShWVWV VSeVdifa ZS` V W S` V [XcbVW i agV ZShVeb[`W Vae\_ Sfv[S`Z

